



# Heamoor School Non-Negotiables

All skills linked to each subject should be taught through project based learning whenever possible.

## Science

Area of learning	EYFS/ Key Stage 1	Lower Key Stage 2 (Year 3 & 4)	Upper Key Stage 2 (Year 5 & 6)
<p><b>Working Scientifically</b></p> <p><i>(To be delivered through the subject, not to be taught separately)</i></p>	<p>Ask simple questions and recognise that they can be answered in different ways.</p> <p>Observe closely using simple equipment.</p> <p>Perform simple tests.</p> <p>Identify and classify.</p> <p>Gather and record data to help in answering questions.</p> <p>Use observations and ideas to suggest answers to questions.</p>	<p>Ask relevant questions and use different types of scientific enquiries to answer them.</p> <p>Set up simple practical enquiries, comparative and fair tests.</p> <p>Make systematic and careful observations and where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.</p> <p>Gathering, recording, classifying and presenting data in a variety of ways to help answer questions.</p> <p>Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.</p> <p>Report findings from enquiries, including oral and written explanations, displays and presentations of results.</p> <p>Identify differences, similarities and changes related to simple scientific ideas and processes.</p> <p>Use straight forward scientific evidence to answer questions or to support their findings.</p> <p>Use results to draw simple conclusions, make predictions and suggest improvements.</p>	<p>Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.</p> <p>Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate.</p> <p>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</p> <p>Report and present findings from enquiries, including conclusions in oral and written forms such as displays and presentations.</p> <p>Use test results to make predictions to set up further comparative and fair tests.</p> <p>Identify scientific evidence that has been used to support ideas or arguments.</p>



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<b>Plants</b>	<p>Identify and name a variety of common wild and garden plants.</p> <p>Identify and describe the basic structure of a plant.</p> <p>Explore how plants feel, look, smell.</p>	<p>Continue to identify a range of common wild plants, garden plants and trees (deciduous and evergreen).</p> <p>Describe and label the basic structure of a common plant i.e. root, stem, leaves and flowers.</p> <p>Use our local environment to explore and answer questions about plants growing in our habitat.</p>	<p>Observe and describe how seeds and bulbs grow. Make daily observations and record.</p> <p>Understand and describe how plants need: water, light and a suitable temperature to grow.</p>	<p>Describe and identify the functions of different parts of flowering plants (roots, stem, leaves and flower).</p> <p>Investigate how water is transported within plants.</p> <p>Explore the importance of flowers and the part that they play in the life cycle of flowering plants (pollination, seed formation and seed dispersal).</p>	N/A.	N/A.	N/A.



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<b>Animals including humans</b>	<p>Observe and describe features of animals and plants.</p> <p>Know that animals are living things.</p> <p>Say how animals and plants are different.</p>	<p>Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.</p> <p>Also name and identify animals and mammals that are carnivores, herbivores and omnivores.</p> <p>Describe and compare the structure of a variety of animals including pets.</p> <p>Identify, name, label and draw basic parts of the human body exploring senses.</p>	<p>To notice that animals, including humans, have offspring which grow into adults.</p> <p>Find out about and describe the basic needs of animals, including humans, for survival (water food and air).</p> <p>Describe the importance of exercise, hygiene and eating the right amounts of different types of food.</p>	<p>Identify that animals, including humans, need the right types and amount of nutrition.</p> <p>Recognise that animals, including humans, get nutrition from what they eat and cannot make their own food.</p> <p>Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p>	<p>Describe the simple functions of the basic parts of the digestive system in humans.</p> <p>Identify the different types of teeth in humans, and their simple functions.</p> <p>Construct and interpret a variety of food chains, identifying producers, predators and prey.</p>	<p>Describe the changes as humans develop to old age.</p>	<p>Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.</p> <p>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</p> <p>Describe the ways in which nutrients and water are transported within animals, including humans.</p>



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<b>Living things and their habitats</b>	<p>Talk about the features of their immediate environment.</p> <p>Say how environments vary from one to another.</p>	<p>Observe changes across the four seasons.</p> <p>Observe and describe weather associated with the seasons and how day length can vary.</p>	<p>Explore and compare the differences between things that are living and things that are dead/ never been alive.</p> <p>Identify that most living things live in habitats to which they are suited and describe how habitats provide for the basic needs of different kinds of animals/plants.</p> <p>Identify and name a variety of plants and animals in their habitats.</p> <p>Describe how animals obtain their food from plants and other animals, explore a simple food chain.</p> <p>Identify and name different sources of food.</p>	N/A.	<p>Recognise that living things can be grouped in a variety of ways.</p> <p>Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.</p> <p>Recognise that environments can change and that this can sometimes pose dangers to living things.</p>	<p>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</p> <p>Describe the life process of reproduction in some plants and animals.</p>	<p>Describe how living things are classified into broad groups according to common characteristics and based on similarities and differences.</p> <p>Give reasons for classifying animals and plants based on specific characteristics.</p>



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<b>Chemistry</b>	<p>Begin to say differences and similarities between materials.</p>	<p>Begin to distinguish between an object and the material from which it is made.</p> <p>Identify and name a variety of everyday materials including: wood, plastic, glass, metal, water and rock.</p> <p>Describe simple physical properties of everyday materials.</p> <p>Compare and group together a variety of everyday materials on the basis of their simple physical properties.</p>	<p>Identify and compare the suitability of a variety of everyday materials such as wood, metal, plastic, glass, brick, rock paper and cardboard.</p> <p>Find out how the shapes of solid objects can be made from some materials can be changed by squashing, bending, twisting and stretching.</p>	<p>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.</p> <p>Describe in simple terms how fossils are formed when things that have lived are trapped within rock.</p> <p>Recognise that soils are made from rocks and organic matter.</p>	<p>Compare and group materials together, according to whether they are solids, liquids or gases.</p> <p>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.</p> <p>Identify the part played by evaporations and condensation in the water cycle and associate the rate of evaporation with temperature.</p>	<p>Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity and response to magnets.</p> <p>Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.</p> <p>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</p> <p>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</p> <p>Demonstrate that dissolving, mixing and changes of state are reversible changes.</p> <p>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.</p>	N/A.



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Light and sound	N/A.	N/A.	N/A.	<p>Recognise that they need light in order to see things and that dark is the absence of light.</p> <p>Notice that light is reflected from surfaces.</p> <p>Recognise that light from the sun can be dangerous and that there are ways to protect our eyes.</p> <p>Recognise that shadows are formed when the light from a light source is blocked by a solid object.</p>	<p>Identify how sounds are made, associating some of them with something vibrating.</p> <p>Recognise that vibrations from sounds travel through a medium to the ear.</p> <p>Find patterns between the pitch of a sound and features of the object that produced it.</p> <p>Find patterns between the volume of a sound and the strength of vibrations that produced it.</p> <p>Recognise that sounds get fainter as the distance from the sound source increases.</p>	N/A.	<p>Recognise that light appears to travel in straight lines.</p> <p>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.</p> <p>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.</p> <p>Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p>



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<b>Earth and Space</b>	N/A.	N/A.	N/A.	N/A.	N/A.	<p>Describe the movement of the Earth, and other planets, relative to the Sun in the solar system.</p> <p>Describe the movement of the Moon relative to the Earth.</p> <p>Describe the Sun, Earth and Moon as approximately spherical bodies.</p> <p>Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</p>	N/A.
<b>Forces and magnets</b>	N/A.	N/A.	N/A.	<p>Compare how things move on different surfaces.</p> <p>Notice that some forces need contact between two objects but magnetic forces can act at a distance.</p> <p>Observe how magnets attract or repel each other and attract some materials and not others.</p> <p>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.</p> <p>Describe magnets as having two poles.</p> <p>Predict whether two magnets will attract or repel each other, depending on which poles are facing.</p>	N/A.	<p>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p> <p>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces.</p> <p>Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p>	N/A.



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<b>Electricity</b>	N/A.	N/A.	N/A.	N/A.	<p>Identify common appliances that run on electricity.</p> <p>Construct a simple series electrical circuit identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</p> <p>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.</p> <p>Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.</p> <p>Recognise some common conductors and insulators, and associate metals with being good conductors.</p>	N/A.	<p>Associate the brightness of a lamp of the volume of a buzzer with the number and voltage of cells used in the circuit.</p> <p>Compare and give reasons for variations in how components function, including the brightness of bulbs,</p>
<b>Evolution and inheritance</b>	N/A.	N/A.	N/A.	N/A.			<p>Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</p> <p>Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</p> <p>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p>