Subject: Science Curriculum Map

	EYFS	KS1	
	YR	Y1	Y2
Curriculum Purpose of study:	Children develop and learn in different ways. Practitioners teach children by ensuring challenging, playful opportunities across the prime and specific areas of learning and development. They foster the characteristics of effective early learning: • Playing and exploring • Active learning • Creating and thinking critically	A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.	
Curriculum Aims:	Understanding the world involves guiding children to make sense of their physical world and their community. The frequency and range of children's personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children's vocabulary will support later reading comprehension.	♣ develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics ♣ develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them ♣ are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future. Scientific knowledge and conceptual understanding The programmes of study describe a sequence of knowledge and concepts. While it is important that pupils make progress, it is also vitally important that they develop secure understanding of each key block of knowledge and concepts in order to progress to the next stage. Insecure, superficial understanding will not allow genuine progression: pupils may struggle at key points of transition, build up serious misconceptions, and/or have significant difficulties in understanding higher-order content. Pupils should be able to describe associated processes and key characteristics in common language, but they should also be familiar with, and use, technical terminology accurately and precisely. They should build up an extended specialist vocabulary. They should also apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data. The social and economic implications of science are important but, generally, they are taught most appropriately within the wider school curriculum: teachers will wish to use different contexts to maximise their pupils' engagement with and motivation to study science. The nature, processes and methods of science 'Working scientifically' specifies the understanding of the nature, processes and methods of science for each year group. It should not be taught as a separate strand. The notes and guidance give examples of how 'working scientifically' might be embedded within the content of biology, chemistry and physics, focusing on the key features of scientific enquiry, so that pupils learn to use a variety of approaches to answer relevant scientific questions. These types of scientific enquiry should include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Pupils should seek answers to questions through collecting, analysing and presenting data.	

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<tr><td></td><td></td><td>Spoken language
The national curriculum for science reflects the importance of spoken language in pupils' development across the whole curriculum – cognitively, socially and linguistically. The quality and variety of language that pupils hear and speak are key factors in developing their scientific vocabulary and articulating scientific concepts clearly and precisely. They must be assisted in making their thinking clear, both to themselves and others, and teachers should ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions.</td></tr>
<tr><td>Curriculum Subject Content / Attainment:</td><td>ELG: The Natural World
Children at the expected level of development will:
- 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.</td><td>The principal focus of science teaching in key stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They should be encouraged to be curious and ask questions about what they notice. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. They should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos. 'Working scientifically' is described separately in the programme of study, but must always be taught through and clearly related to the teaching of substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content. Pupils should read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at 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.

Y1

Plants - Statutory requirements
Pupils should be taught to:
1. identify and name a variety of common wild and garden plants, including deciduous and evergreen trees
2. identify and describe the basic structure of a variety of common flowering plants, including trees.

Y2

Plants - Statutory requirements
Pupils should be taught to:
1. observe and describe how seeds and bulbs grow into mature plants
2. find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</td></tr>
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		Animals, including humans - Statutory requirements Pupils should be taught to: 1. identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals 2. identify and name a variety of common animals that are carnivores, herbivores and omnivores 3. describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) 4. 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 - Statutory requirements** Pupils should be taught to: 1. distinguish between an object and the material from which it is made 2. identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock 3. describe the simple physical properties of a variety of everyday materials 4. compare and group together a variety of everyday materials on the basis of their simple physical properties. **Seasonal changes - Statutory requirements** Pupils should be taught to: 1. observe changes across the four seasons 2. observe and describe weather associated with the seasons and how day length varies.	**Animals, including humans - Statutory requirements** Pupils should be taught to: 1. notice that animals, including humans, have offspring which grow into adults 2. find out about and describe the basic needs of animals, including humans, for survival (water, food and air) 3. describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. **Uses of everyday materials - Statutory requirements** Pupils should be taught to: 1. identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses 2. find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. **Living things and their habitats - Statutory requirements** Pupils should be taught to: 1. explore and compare the differences between things that are living, dead, and things that have never been alive 2. 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 3. identify and name a variety of plants and animals in their habitats, including microhabitats 4. 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.

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	EYFS	Y1	Y2
Autumn 1	**Topic: Celebrations** **Curriculum:** • Materials - building houses • Growing from babies – how we change as we grow. Read books about babies. • Seasonal changes - Autumn Key Questions: • How? When? What?- Open ended questions Onslow: • Baby visit - support children's ideas with real life experiences • Set up an investigation area in the classroom	**Topic: Around the UK** **Curriculum:** Plants: • Identify and describe the basic structure of a variety of common flowering plants, including trees. • Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees • National/local flowers - physical geography linked to UK Working scientifically: • Use observations and ideas to suggest answers to questions • Drawing simple diagrams and adding simple labels. Key Questions: • What does each part of the plant do? • What plants do we have in our local area? • Which plants would you choose to make a hedge around your garden? Onslow: • Food tasting - UK food. Describing taste • Identifying trees on site. • Arboretum walk: select two trees to observe throughout the year. • Observing the daily weather and taking daily temperatures. • Woodland School	**Topic: Into the Dark** **Curriculum:** • Recap of A4 Year 1 • WS 2345, A23, EM12, P1 • Discovering what is inside a bulb. Key Questions: • Why do we need to wash our hands? • Which material would be the most absorbent? • What do humans need to survive? • Is that material suitable for that use? • What is inside a bulb? • How can a bulb survive the winter? • How should you look after your teeth? Onslow: • Making link with FN on hygiene, basic needs for humans, testing suitable bandage materials , What does Jimmy - Florence Nightingale's pet tortoise need to survive? • FN Wow day
Autumn 2	**Topic: Journeys** **Curriculum:** • Weekly experiments e.g. how to melt ice to free the trapped toys • Autumn – discussing the season and changes happening. • Woodland, outside areas, sensory exploration. Animal hibernation. Key Questions: • How do we know?	**Topic: Terrific Transport** **Curriculum:** • Weather changes associated with each season. The human body • Body parts linked to senses. Work scientifically: • labelling body parts • Conducting simple experiments- taste and smell • Conducting simple experiments- flight • Recording data on simple tables Key Questions: • What are the 5 senses?	**Topic: Into the Dark** **Curriculum:** • WS245 • P1 • EM12, • Best material for Elasti-Girl's outfit • Bending, stretching and twisting materials Key Questions: • What is the best material for a certain application? • What properties of a material make it suitable for a certain application? • What are the properties of materials?

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	Onslow: • Guest speakers, local community, inviting parents to share their knowledge • Science & investigation area • Begin to record the weather.	• Why are the senses important? Onslow: • Woodland School • Observing the daily weather and taking daily temperatures. • Making healthy travel choices. What is the effect of different modes of transport on our bodies? (Bike, space travel, car) • Things that fly.	Onslow: • Classroom recycling link • Magic Flower experiment • PE Movement session for the Life cycle of a bulb - Planting Onion bulbs • Look at John McAdam inventor of tarmac.
Spring 1	**Topic: 'Once upon a time' Traditional tales** **Curriculum:** • Cooking gingerbread men • Baking Bread • Growing vegetables • Cutting open fruit & vegetables to see what they look like inside Key Questions: • What is your house made of? • Why did the house made of straw collapse? • Does there have to be an order? Why? Onslow: • Measuring /baking - Using meaningful vocabulary relating to home • Children exploring how to mix flour and water to make the right consistency for a dough	**Topic: Our wonderful world: Wintry Wonderlands** **Curriculum**: Animals including humans • Describe and compare the structure of a variety of common animals • Animal classifications mammal, fish, birds, amphibian, reptile Work scientifically: • Gathering and recording data to help in answering questions. • Identifying and classifying • Observing closely. Key Questions: • What do amphibians and fish have in common? How are they different? • Why does ice melt at different rates? • Why is there no ice at the equator? Onslow: • Arboretum walk: observe changes in selected trees throughout the year. • Wow day melting ice and making ice cream • Woodland School • Observing the daily weather and taking daily temperatures. • Collaborative work on animal databases. Link to computing. • Creating simple pictographs. Link to maths	**Topic: Explorers** **Curriculum**: • A3 • P12 • WS2345 Key Questions: • What foods are healthy to eat? • What food groups ae there? • Which plants grow from seeds? Onslow: • Plant Investigation - What is inside a seed? • Planting seeds to grow outside in the flower and vegetable beds at Onslow • Making a bean diary
Spring 2	**Topic: Once Upon A Time**	**Topic: Our wonderful world: Sizzling Equators**	**Topic: Explorers**

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	Curriculum: • Spring – discussing the season and changes happening. • Woodland – observing changes • Outside areas: sensory exploration. Key Questions • What changes can you see happening outside? • How do we look after our bodies? Onslow: • Doctor and dentist visit. Famous doctors etc	**Curriculum**: • Animal classifications herbivore, carnivore, omnivore. • Retrieval of animal classifications: mammal, fish, birds, amphibian, reptile, for sorting desert animals • Retrieval: naming plants in the local area (daffodils and spring flowers) Key Questions: • What are the similarities and differences between animals in the polar regions of the Earth and the regions around around the equator? • How do animals survive in extreme temperatures? Onslow: • Arboretum walk: observe changes in selected trees throughout the year. • Observing the daily weather and taking daily temperatures. • Planting seeds • Creating simple food chains.	**Curriculum**: • LT1234 Key Questions; • Why certain creatures live where they do? • Was that 'thing' once alive? • What kind of habitat is that? Onslow: • Collecting specimens • Mini beast investigations
Summer 1	**Topic: Our World** **Curriculum:** • Different habitats eg. Farm, zoo and woodland • Woodland - attempting to grow seeds/cress • Life cycles + habitats • Classification of minibeasts e.g. insect, spider Key Questions: • What is a mini beast? • How do we know? • What does a plant need to grow? Onslow: • Woodland • Outdoor learning: onsite bird feeders/nesting	**Topic: Castles** **Curriculum:** Materials • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock • Distinguish an object and material from which it is made. • Compare and group together a variety of everyday materials on the basis of their simple physical properties. Working scientifically: • Gathering and recording data to help in answering questions • Identifying and classifying • Observing closely. Key Questions: • What is it made of? Why? • Why were stone castles better than wooden buildings? Onslow: • Woodland school: habitats, birds nests • Eggsperiment, Can you save Prince Eggbert?	**Topic: Tales from Other Cultures** **Curriculum**: • P12 Key Questions: • What does a plant require to grow into a healthy plant? • What happens to a plant if it has no light? Onslow: • Purple mash animation to show the growth of a seed into a plant • Farm visit linked to lifecycles • Planting out small seedlings and watching them grow.

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		• Observing the daily weather and taking daily temperatures.	
Summer 2	**Topic: Our World** **Curriculum:** • Differences and similarities – under the sea • Floating and sinking • Facts about animals Key Questions: • Why? How? Is that sinking? • How is the town house different? What makes you say that? Onslow: • School trip • Outdoor resources	**Topic: Oh I do like to be beside the seaside** **Curriculum**: • Sorting materials that are dead, living and never lived. Working scientifically • Asking simple questions and recognising that they can be answered in different ways • Observing closely, using simple equipment • Performing simple tests • Using observations and ideas to suggest answers to questions • Gathering and recording data to help in answering ques Key Questions: • What do you want to find out? • How will you test? • What did you find out? Onslow: • Arboretum walk: observe changes in selected trees throughout the year. • Sports day-human body • Observing the daily weather and taking daily temperatures.	**Topic: Tales from other cultures** **Curriculum**: • A13 • WS1256 • Human and animal lifecycles Key Questions: • What are the changes that happen to humans as we grow up? Onslow: • Caterpillars in class that the children watch develop into butterflies • Exercising and observing the changes to the human body linked to sports day.
Additional e.g. clubs, wow weeks, visitors, whole school events etc	• Woodland experience • Daily weather reporting and enquiry throughout the year • Stem Week every 3 years - inviting parents and experts/professionals to share their knowledge. • Growing plants across the school – outside areas and planting beds on site • Visits to the Arboretum and local area • Continuous Provision Activities inside and outside • Science visitors to the school • Farm visit for the whole school • Science afterschool club		