Year 4 LTP

BIOLOGY	CHEMISTRY	PHYSICS

Y3 objectives

These must be taught discreetly at the start of the year, before you move on to your Y4 Spiral LTP, as these objectives do to fit into your current year group topics.

***Science will be taught for 1 hour per week when we return in September until further notice. Therefore, it has been necessary to change the model of the spiral curriculum.**

- Light unit- curriculum statement(s)
  a) recognise that they need light in order to see things and that dark is the absence of light
  b) notice that light is reflected from surfaces
  c) recognise that light from the sun can be dangerous and that there are ways to protect their eyes
  d) recognise that shadows are formed when the light from a light source is blocked by a solid object.
  e) find patterns in the way that the size of shadows change.
- Forces and Magnets unit- curriculum statement(s):
  a) compare how things move on different surfaces
  b) notice that some forces need contact between 2 objects, but magnetic forces can act at a distance
  c) observe how magnets attract or repel each other and attract some materials and not others
  d) 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
  e) describe magnets as having 2 poles and predict whether 2 magnets will attract or repel each other, depending on which poles are facing

Autumn Term Science will be dedicated to teaching these Y3 objectives over weekly 1 hour lessons. Y4 will not start their year group spiral curriculum until spring/ summer and have 2 rotations of the curriculum rather than 3, please factor this in when teaching the objectives, you will only return to them once.

Spring Term and Summer Term	**WEEK 1**	**WEEK 2**	**WEEK 3**	**WEEK 4**	**WEEK 5**	**WEEK 6**	**WEEK 7**	**WEEK 8**	**WEEK 9**	**WEEK 10**	**WEEK 11**	**WEEK 12**
Science unit	**Animals, including humans**		**Living things and their habitats**		**Sound**			**States of Matter**		**Electricity**		
Scientist(s)	**Elizabeth Garrett Anderson** An English physician and suffragist. She was the first woman to qualify in Britain as a physician and surgeon.		**Alfred R. Wallace** Independently formulated the theory of evolution by natural selection; was one of the first biologists to express concern about the effects human activities were having on the natural world.		**Alexander Graham Bell** A Scottish-born American inventor, scientist, and engineer who is credited with inventing and patenting the first practical telephone. He also founded the American Telephone and Telegraph Company in 1885.			**Anders Celsius** A Swedish astronomer who is known for inventing the Celsius temperature scale. Celsius also built the Uppsala Astronomical Observatory in 1740, the oldest astronomical observatory in Sweden.		**Michael Faraday** In 1831, Faraday discovered electromagnetic induction, the principle behind the electric transformer and generator. This discovery was crucial in allowing electricity to be transformed from a curiosity into a powerful new technology.		
Scientific knowledge	• describe the simple functions of the basic parts of the digestive system in humans AIH1 • identify the different types of teeth in humans and their simple functions AIH2		• 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 LTATH2 • recognise that environments can		• identify how sounds are made, associating some of them with something vibrating • recognise that vibrations from sounds travel through a medium to the ear S2 • find patterns between the pitch of a sound and features of the object that produced it • find patterns between the			• compare and group materials together, according to whether they are solids, liquids or gases SOM1 • 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) SOM2		• 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 E2 • 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		

	• construct and interpret a variety of food chains, identifying producers, predators and prey	change and that this can sometimes pose dangers to living things LTATH3	volume of a sound and the strength of the vibrations that produced it S4 • recognise that sounds get fainter as the distance from the sound source increases S5	• identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature SOM3	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 E5

Working scientifically skills	**During Year 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of all units in our spiral curriculum:** 1) asking relevant questions and using different types of scientific enquiries to answer them 2) setting up simple practical enquiries, comparative and fair tests 3) making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers 4) gathering, recording, classifying and presenting data in a variety of ways to help in answering questions 5) recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables 6) reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions 7) using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions 8) identifying differences, similarities or changes related to simple scientific ideas and processes 9) using straightforward scientific evidence to answer questions or to support their findings.
Investigation Opportunities: which Working Scientifically skills can they show? **Taken from Hamilton Trust**	**Animals Inc, Humans** AIH1 describe the simple functions of the basic parts of the digestive system in humans See supporting documents, practical digestive system experiment and observe/ record findings WS SKILLS 2,3,4,5,6,7 AIH2 identify the different types of teeth in humans and their simple functions Tooth decay investigation using eggs in different solutions (vinegar, sugar solution, milk etc) observe and record findings WS SKILLS ALL AIH 3 construct and interpret a variety of food chains, identifying producers, predators and prey **Living Things and their Habitats** LTATH1 recognise that living things can be grouped in a variety of ways LTATH2 explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment A) Take a local nature walk – pond, greenery, grasses, woodland. See supporting documents LTATH2 WS SKILLS 1,3,5

	B) Create a branching database/ classification Key to sort and identify the animals/plants that were found on the walk WS SKILLS 1,3,5,6 C) Observational drawing using magnifying glasses of animals/ plants found (if collected) WS SKILLS 1,3 LTATH3 recognise that environments can change and that this can sometimes pose dangers to living things A) See supporting documents LTATH3 'greenhouse gases experiment' WS SKILLS 2,3,5,6 B) Redesign an area in school to improve the habitat there e.g. woodland, allotment, field WS SKILLS 8,9 **Sound** S1 identify how sounds are made, associating some of them with something vibrating S2 recognise that vibrations from sounds travel through a medium to the ear See supporting docs S1 and S2- tuning fork investigation WS SKILLS 1,2,5,6,7 S3 find patterns between the pitch of a sound and features of the object that produced it S4 find patterns between the volume of a sound and the strength of the vibrations that produced it See supporting docs S3 and S4- instruments investigation WS SKILLS 6,8,9 S5 recognise that sounds get fainter as the distance from the sound source increases Plan and investigate which material best reduces the sounds we hear. See S5 PPT reducing sounds investigation. WS SKILLS ALL **States of Matter** SOM1 compare and group materials together, according to whether they are solids, liquids or gases Investigate the differences between solids and liquids by examining and comparing the properties of sand and water- see documents SOM1 and supporting PPT WS SKILLS 1,2,3,6,7 SOM2 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) Boiling and freezing of water and taking temperatures, safely do this with some other liquids? SOM3 identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature Make it rain in the classroom! See supporting documents for SOM 3 WS SKILLS 1,2,3,7,9 **Electricity** E1 identify common appliances that run on electricity E2 construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers See E2 creating a circuit investigation in documents WS SKILLS 1,2,3,5,6,9 E3 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 E4 recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit E5 recognise some common conductors and insulators, and associate metals with being good conductors See documents E5 for lesson plan experiment using conductors WS SKILLS ALL				
Scientific vocabulary	Mouth, Tongue, Teeth, Oesophagus, Stomach, Small Intestine, Large Intestine, Herbivore, Carnivore, Canine, Incisor, Molar	Vertebrates, Fish, Amphibians, Reptiles, Birds, Mammals, Invertebrates, Snails, Slugs, Worms, Spiders, Insects, Environment, Habitats	Volume, Vibration, Wave, Pitch, Tone, Speaker	Solid, Liquid, Gas, Evaporation, Condensation, Particles, Temperature, Freezing, Heating	Cells, Wires, Bulbs, Switches, Buzzers, Battery, Circuit, Series, Conductors, Insulators

Spiral rationale:

12 weeks discreet catch-up

Animals including Humans= 4 weeks over the year (3 objectives)

Living Things and Their Habitat= 4 weeks over the year (3 objectives)

Sound = 6 weeks over the year (5 objectives)

States of Matter = 4 weeks over the year (3 objectives)

Electricity = 6 weeks over the year (5 objectives)