Biology

KS1 Working Scientifically:
1. asking simple questions and recognising that they can be answered in different ways
2. observing closely, using simple equipment
3. performing simple tests
4. identifying and classifying
5. using their observations and ideas to suggest answers to questions
6. gathering and recording data to help in answering questions

Year 1	Knowledge	Vocabulary	Skills
Spring term	**Plants** • identify and name a variety of common wild and garden plants, including deciduous and evergreen trees • identify and describe the basic structure of avariety of common flowering plants, including trees	bud, bulb, flower, petal, stem, root, branch, tree, deciduous, coniferous, evergreen, vegetable	*2. e.g. use a magnifying glass to observes leaves/flowers collected* *4. e.g. identifying the parts of a plant and classifying plants by simple characteristics such as shapes of leaves/petals* *5. e.g. Why do plants have different sized leaves? Why do plants have colourful flowers? Why do plants have roots?* *e.g. growing plants and measuring them at regular intervals*
Summer term	**Animals including humans** • 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 partsof the human body and say which part of the body is associated with each sense	animal, amphibian, reptile, bird,mammal, carnivore, herbivore, omnivore	*4. e.g. identifying the type of living thing and classifying by simple characteristics such as carnivores, herbivores and omnivores* *5. e.g. Why does a hedgehog have spines?*

Year 2	Knowledge	Vocabulary	Skills
Autumn term	**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	seed, bulb, mature, healthy	*1. 2. 3. 5. 6.* *e.g. grow plants with varying water, light and temperature measuring at regular intervals*
Spring term	**Living things and their habitat** • 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 habitatsto 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 microhabitats • 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	habitat, microhabitat, indigenous, rivers, ocean, woodland, pond, rainforest, desert, species, alive, never alive	*2. e.g. looking at features of minibeasts/ pond life and identifying what makes them suitable for their habitat* *5. e.g. Why does a polar bear have white fur?* *6. e.g. sorting objects into 'living','dead' and 'never lived'.*
Summer term	**Animals including humans** • 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 ofexercise, eating the right amounts of different types of food, and hygiene	healthy, diet, balanced diet, offspring, exercise, protein, carbohydrate, fat, nutrition, hygiene, survival	*5. e.g. Which animal offspring matches the adult animal? Whichfoods match different food groups?*

LKS2 Working Scientifically:
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

Year 3	Knowledge	Vocabulary	Skills
Spring term	**<u>Plants</u>** • 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	roots, stem/trunk, leaves, flowers, pollen, petals, carpel, stigma, style, stamen, anther, filament, pollination, fertilisation, seed dispersal	*1. 2. 3. 4. 5. 6. 7. 8. 9.* *e.g. do two different types of plants grow at the same rate, with the same amount of: water/sunlight/temperature/nutrients?* *e.g. identifying which plant type uses the most water by measuring the amount of water using moisture measurers* *e.g. How water is transported in a plant, using food colouring in water*?
Summer term	**<u>Animals including humans</u>** • identify that animals, including humans, needthe 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 animalshave skeletons and muscles for support, protection and movement	muscle, tendon, ligament, nutrition, diet, skeleton,joint, spine, ribcage, pelvis	*4. 8.* *e.g. using food labels to explore and classify which foods offer different food groups* *e.g. Which other animals have similar or different skeletons to humans? Or, identify the ways that muscles move in different animals for different purposes*

Year 4	Knowledge	Vocabulary	Skills
Spring term	**<u>Living things and their habitats</u>** • recognise that living things can be grouped ina 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 andthat this can sometimes pose dangers to living things	Flowering plant, non-flowering plant, environment, pollution, classification, key	*1. 5. 6. 8.* *e.g. to sort and classify a wide range of living things into groups,such as animals, flowering plants and non-flowering plants* *e.g. sort and classify vertebrate animals – fish, amphibians, birds, reptiles and mammals. And invertebrate animals into – insects and arachnids* *e.g. pupils explore examples of human impact (positive and/ornegative) on environments, such as nature reserves or population* *e.g. creating a simple guide or key to explore local plants and animals*
Spring term	**<u>Animals including humans</u>** • describe the simple functions of the basic parts of the digestive system in humans • identify the different types of teeth in humansand their simple functions • construct and interpret a variety of food chains, identifying producers, predators and prey	teeth, incisor, canine, pre-molar, molar, organ, small intestine, large intestine, stomach, oesophagus, mouth, tongue, saliva, food chain, prey, predator, producer	*1. 5. 6. 9.* *e.g. to create labelled diagrams of the basic parts of the digestivesystem* *e.g. to use pieces of clay to createbite impressions to identify theuses of different teeth or to eat apiece of fruit (such as apples) andidentify which teeth do which* *jobs and why*

UKS2 Working Scientifically:
1. planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary 2. taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
3. recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
4. using test results to make predictions to set up further comparative and fair tests
5. 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
6. identifying scientific evidence that has been used to support or refute ideas or arguments.

Year 5	Knowledge	Vocabulary	Skills
Summer term	**<u>Living things and their habitats</u>** • describe the differences in the life cycles of amammal, an amphibian, an insect and a bird • describe the life process of reproduction insome plants and animals	gestation, embryo, offspring,infant, adult, lifecycle, pollination, fertilisation, sexual reproduction (animal and plants), asexual reproduction (plants only),chrysalis	*3. 6.* *e.g. dissect a flower to analyse the key sexual structures of aflower*
Summer term	**<u>Animals including humans</u>** • describe the changes as humans develop toold age	reproduction, gestation, fertilisation, embryo, offspring, infant,adult, life cycle, puberty	*3. 5. 6.* *e.g. analyse growth data of ahuman and plot into graphs*

Year 6	Knowledge	Vocabulary	Skills
Autumn Term	**Animals including 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	Drugs, blood vessels, veins,arteries, capillaries,heart, atrium,ventricle, circulatory system, oxygenated blood, deoxygenated blood, liver,kidneys, oxygen, white blood cells,red blood cells	*6.* *e.g. Explore truths and myths about the effects of drugs and alcohol on the human body*
Summer term	**Living things and their habitats** • 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	micro-organism, vertebrate, invertebrate, species, kingdom,phylum, class,order, family	*1. 2. 5. 6.* *e.g. use existing classification keys to sort living things using their kingdom, phylum, class, order, family, genus and species* *e.g. design your own 'new' creature to fit into a specific classification group*
Summer term	**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 totheir parents • identify how animals and plants are adapted to suit their environment in different ways and thatadaptation may lead to evolution	Offspring, adaptation, evolution, inheritance, Charles Darwin,genes	*5. 6.* *e.g. study how mutations andadaptions can be useful in survival*

GLOSSARY

Adaptation – a feature of a plant oranimal that helps it survive

Aim – what you're trying to find out in an investigation

Asexual Reproduction – when part of a plant (or animal) grows into a new plant(or animal)

Adult – when a human is fully grown and developed (they have finished puberty) **Alive** - when a living thing (plant, animal or micro-organism) is living – not dead **Amphibian** – an animal that lives on land and in water, is born with gills before laterdeveloping lungs, lays eggs in water, has damp skin and has a changing body temperature (e.g., frog, toad and newt)

Anther – part of the stamen that producesthe male sex cells (pollen)

Arteries – carry blood away from theheart to the body

Atrium – where the blood collects when itenters the heart

Backbone – bone that protects the spinalnerve

Balanced diet - eating a variety of different foods (and the right amounts from different food groups) to maintain ahealthy body

Bird – animals that breathe with longs, lays eggs with hard shells and that have a steady body temperature (e.g., penguin, ostrich and falcon)

Bladder – the organ that stores urine(wee)

Blood vessels – a system of tubes that carry the blood through the body – themain ones are arteries, veins and capillaries

Bulb – the underground bud or stem of aplant at resting stage

Canine – pointed teeth that grip and tearfood

Capillaries – small blood vessels that allowfood, water and waste products to move in and out of the blood

Carpel – the female part of a flower

Carbohydrate – a food group for energy (carbohydrates can be split into starchesand sugars)

Carnivore – an animal that eats otheranimals (not plants)

Charles Darwin – a famous English scientist who studied things in nature, such as animals and plants and how theylive (commonly known for his work on variation in plants and animals and evolution)

Chrysalis – where a caterpillar changesinto a butterfly

Circulatory system – the system that transports substances around the body inthe blood

Classification – putting living things intogroups using their features

Conclusion – a simple sentence that sums up what you found in an investigation **Coniferous** – trees that have cones insteadof flowers are evergreen (keep their leaves in winter) - e.g. pine trees

Consumer – something that consumes food and doesn't produce it (an animal)

Deciduous – trees that lose their leaves in winter, for example oak trees and ash trees

Deoxygenated blood – blood that is low inoxygen and high in carbon dioxide (the right side of the heart pumps deoxygenated blood to the lungs)

Diet – the combination of food typicallyeaten by a specific group of people or other organisms

Digestive system – the system in the bodywhere food is broken down

Embryo – an unborn or unhatched offspring in the process of development

Evolution – how things change over time

Fat – a food group for energy

Fertilisation – when sperm (in animals) orpollen (in plants) joins with an egg

Fibre – the food group that helps foodmove through the gut

Filament – holds up the anther (part ofthe stamen – male part of a plant)

GLOSSARY

Fish – animals that breathe with gills, layeggs in water, have find and scales and have a changing body temperature (e.g.,trout, shark and salmon)

Flower – the part of a plant that containsthe reproductive organs

Flowering plant – a type of plant thatproduces flowers, fruit and seeds

Food chain – shows what is eaten by what

Food web – more than one food chain linked up

Genes – unit of information that determines your traits, which are featuresor characteristics passed on to you – or inherited – from your parents

Germination – when a seed starts to sprout and grow into a small plant (seedling)

Gestation – the time period between a female mammal becoming pregnant (involving fertisiliation) and giving birth,during which fetal development takes place

Habitat – where an animal or plant lives

Heart – an organ that pumps blood around the body

Herbivore – an animal that feeds on plants

Incisors – front teeth that snip and cut food

Indigenous – living things that occurnaturally (are native to an area)

Inheritance – when living things reproduce and pass on characteristics totheir offspring

Invertebrate – an animal with no backbone

Joint – where muscles pull on bones (bones have joints so that the skeleton canbend)

Key – a series of questions that help youidentify an unknown plant or animal

Kidneys – organs that help to get rid of waste materials

Large intestine – where water is absorbedinto the body

Leaf – part of a plant where sunlight isused to make food

Life cycle – the stages that a plant oranimal goes through during its life

Ligament – hold joints together

Liver – the organ that helps to clean yourblood

Lungs – organs that take in oxygen from the air into the blood and get rid of carbondioxide

Mammal – an animal that that breathes with lungs, has body hair or fur, has a steady body temperature, gives birth to babies and feeds babies milk (e.g., dog, whale, lion, seal, bat and human).

Microhabitat - a small area which differs somehow from the surrounding habitat

Micro-organism – a very tiny living thing(e.g., bacteria)

Molars – back teeth that grind and crushfood

Muscle – a part of the body that workswith the joints to allow movement

Non-flowering plant – plants that don'tproduce flowers/have a flower head

Nutrients – substances that a plant or animal needs to live and grow

Nutrition – the study of food and how itworks in your body (includes all the foodgroups)

Oesophagus – the stretchy tube that connects the stomach and throat

Offspring – the young form of a livingthing produced by reproduction

Omnivore – an animal that eats both meatand plants

Organ – part of the body that has a special job to do

Ovary (plants) – part of the carpel thatproduces female sex cells in a plant (contained in the ovules)

Ovary (animals, including humans) - partof the female reproductive system, whichcontain and release eggs

Oxygen – a non-metal element that is used by animals and plants in the respiration (breathing) process

Oxygenated blood – blood that is oxygen- rich, which is carried away from your lungsto the left side of your heart and is then pumped around your body through the arteries

Petal - part of the plant that is brightly coloured to attract insects

GLOSSARY

Photosynthesis – the way that plants make their own food using energy fromsunlight

Puberty – when the body changes and develops between 10 and 18 years old

Phylum – a group of animals – or in some classifications, plants – sharing one or more major characteristics that set them apart from all other animals or plants

Pollen – male sex cell in plants

Pollination – getting pollen to the stigma

Pollution – when chemicals are introduced to the environment in large doses that makes it harmful for humans, animals and plants

Predator – an animal that eats otheranimals

Prey – animals that the predators kill andeat

Producer – plants in food chains (theymake produce their own food)

Protein – the food group for growth andrepair

Puberty – when the body changes and develops between 10 and 18 years old

Red blood cells – building blocks in our bodies that transport oxygen in the blood

Reproduction – making a new generation(animals have offspring – babies - and plants grow new plants)

Reptile – an animal that breathes with lungs, lays eggs on land, has dry, scaly skinand has a changing body temperature (alligator, snake, crocodile and tortoise)

Rib cage – protects the heart and the lungs

Root - the part of a plant under the ground that takes in water and mineralsand supports the plant

Seed dispersal – the scattering of seeds(fruits and seeds must be carried away from the parent plant to stop overcrowding)

Seed – the product that is made when eggs in a plant's ovary become fertilized by pollen (the ovary becomes a fruit, which contains the seeds)

Sepal – Part of a plant that protects thepetals when the flower's still in the bud

Sexual reproduction – When an egg is fertilised and grows into a new plant oranimal

Skeleton – a framework of bones thatprotect your body parts, support yourbody and let you move

Skull – bones that protect the brain

Small intestine – where food is broken down even more, nutrients from the food are absorbed into the blood and the bloodtransports the nutrients around the body

Species – a group of similar organisms that are able to reproduce

Stamen – the male part of a flower, whichis made up of an anther that is attached toa filament

Stem – holds a plant upright and carries water and minerals from the roots to therest of the plant

Stigma – the top of the female part of theflower (part of the carpel) that collects pollen grains

Stomach – the organ that holds food andstarts to break it down

Style – the part of a flower that holds up astigma

Tendon – joins muscle to bone

Variable – a factor in an investigation thatyou can change or measure

Variation – differences in living things

Veins – carry blood

Ventricles – two chambers in the heart that squeeze and squirt out blood to thebody and lungs

Vertebrate – an animal with backbones

Vitamins and minerals – the food groupfor healthy cells (the building blocks of living things)

White blood cells – the building blocks of living things that help the immune system fight germs