

## Biology Year 7 Curriculum Overview 2023-24

|   | Autumn   |  | Spring  |   | Summer   |  |
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|   | Learning Cycle 1   | Learning Cycle 2   | Learning Cycle 3  | Learning Cycle 4  | Learning Cycle 5   | Learning Cycle 6   |
| Topic                                       | Cells  | Movement   | Human reproduction  | Plant reproduction  | Photosynthesis   | Interdependence  |
| Critical Prior Knowledge                    | KS2: living things and their habitats, humans as animals   | Animals, including humans – identify parts of the body and identify which is associated with each sense.   | KS2: living things and their habitats, evolution and inheritance<br>Y7: plant reproduction  | KS2: living things and their habitats, basic structure.   | KS2: living things and their habitats, plants (evergreen and deciduous)  | KS2 Food chains and food webs, habitats (Living things and their habitats)   |
| Overall Intent (Big ideas and key concepts) | Cells as the fundamental unit of living organisms, including how to observe, interpret and record cell structure using a light microscope. The functions of the cell wall, cell membrane, cytoplasm, nucleus, vacuole, mitochondria and chloroplasts. The similarities and differences between plant and animal cells. | The structure and functions of the human skeleton, to include support, protection, movement and making blood cells. Biomechanics – the interaction between skeleton and muscles, including the measurement of force exerted by different muscles. The function of muscles and examples of antagonistic muscles | Reproduction in humans (as an example of a mammal), including the structure and function of the male and female reproductive systems, menstrual cycle (without details of hormones), gametes, fertilisation, gestation and birth, to include the effect of maternal lifestyle on the foetus through the placenta. | Reproduction in plants, including flower structure, wind and insect pollination, fertilisation, seed and fruit formation and dispersal, including quantitative investigation of some dispersal mechanisms | Reactants in, and products of, photosynthesis, and a word summary for photosynthesis<br>Dependence of almost all life on Earth on the ability of photosynthetic organisms, such as plants and algae, to use sunlight in photosynthesis to build organic molecules that are an essential energy store and to maintain levels of oxygen and carbon dioxide in the atmosphere | Interdependence of organisms in an ecosystem, including food webs and insect pollinated crops. Dependence of almost all life on Earth on the ability of photosynthetic organisms, such as plants and algae, to use sunlight in photosynthesis to build organic molecules that are an essential energy store. The importance of |

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|   | <p>The role of diffusion in the movement of materials in and between cells.</p> <p>The structural adaptations of some unicellular organisms. The hierarchical organisation of multicellular organisms: from cells to tissues to organs to systems to organisms.</p> |  |  |   | <p>Adaptations of leaves for photosynthesis. plants making carbohydrates in their leaves by photosynthesis and gaining mineral nutrients and water from the soil via their roots. The role of leaf stomata in gas exchange in plants</p>  | <p>plant reproduction through insect pollination in human food security How organisms affect, and are affected by, their environment, including the accumulation of toxic materials. Ecological techniques – including transects, sampling</p>         |
| <b>Essential Knowledge milestones (What students must master)</b> | <p>Describe how the different parts of a microscope are used to magnify an object. Identify and name the features of cells. Use a microscope to produce a biological drawing of a cell.</p> <p>Describe how some cells are specialised for their function.</p>      | <p>Explain the relationship between cells, tissues, organs and organ systems. Summarise the structure and functions of the human skeleton. Explain how joints allow movement Explain how joints and muscles work together to bring about movement.</p> | <p>To be able to name, locate and describe the functions of the male and female reproductive systems.</p> <p>To be able to describe the processes and significance of fertilisation and implantation.</p> <p>To be able to describe how a foetus develops and the importance of a healthy maternal</p> | <p>To be able to explain how the reproductive organs of a plant are adapted for pollination.</p> <p>To be able to describe the stages of plant fertilisation and germination.</p> <p>To be able to describe how and why plants spread their seeds.</p> <p>To be able to investigate seed dispersal methods.</p> | <p>To be able to use a word equation to describe photosynthesis in plants and algae.</p> <p>To be able to describe the structure of leaves.</p> <p>To be able to describe how leaves are adapted to different environments.</p> <p>To be able to identify the uses of glucose by a plant.</p> | <p>To be able to interpret food chains and webs.</p> <p>To be able to explain effects of environmental changes and toxic materials on a species' population.</p> <p>To be able to describe how populations of predators and prey change over time.</p> |

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|                                      | Identify substances which move in and out of cells by diffusion. Compare the structure of unicellular organisms.  |   | lifestyle before birth.<br>To be able to explain how key events in the menstrual cycle can affect conception, fertility treatments and contraception. |   | To be able to describe how light intensity affects photosynthesis   | To be able to describe the interdependence of organisms in an ecosystem.<br>To be able to plan an investigation to answer a question about habitat conditions. |
| <b>Cultural Capital</b>              | Examples – marine algae, amoeba single celled organisms.  | LED Centre/ Cranford links – Careers, Physical trainer, fitness instructor. | Relationships and puberty (Biology) Practical techniques, health and safety, development of fine motor and dexterity skills                           | Use of knowledge in farming and horticulture – Bicton College and arboretum. Green fingers garden centre. | Use of knowledge in farming and horticulture – Bicton College and arboretum. Green fingers garden centre. | Specific terrestrial (Woodbury common) and marine (Exe estuary) food chains and webs.  |
| <b>Assessment</b>                    | <p>In class teacher led reviews and formative feedback – this low-risk challenge and review environment for pupils will include:</p> <ul style="list-style-type: none"> <li>- recap recall quick starters, homework (Educake) (know)</li> <li>- review tasks, multiple choice and extended questions (extend)</li> <li>- in class exam style questions (apply)</li> </ul> <p>Through rigorous, reliable and accessible assessment</p> <ul style="list-style-type: none"> <li>- Formal assessments at the end of every unit of work (Mastery assessments – 10 question recall) across all 3 science subjects</li> <li>- End of learning cycle assessments (Progress check tests – a longer exam style question paper)</li> </ul> |   |   |   |   |  |
| <b>ECC Student Characteristics</b>   | Through these units we will encourage students to work hard and be <b>resilient individuals</b> who <b>embrace challenge</b> and through their <b>creativity</b> and endeavours become <b>reflective learners</b> . Mastering the key concepts of each topic before being able to build on these ideas as they are interleaved through other units later in the course.   |   |   |   |   |  |
| <b>Connection to future learning</b> | Y7: human reproduction, plant reproduction Y8:  |   | Y8: photosynthesis<br>Y9: evolution   |   |   |  |

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| <b>(When is this developed / revisited)?</b> | gas exchange, respiration, photosynthesis<br>Y9: genetics, evolution, digestion and enzymes |  |  |  |  |  |
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