Biology Curriculum Overview

Year	Block 1	Block 2	Block 3	Block 4	Block 5	Block 6
7	**Topic**: Cells and Organisation **Resources**: PP, Practical on Showbie **Focus**: Looking the core biological concepts from starting with cells and their organelles. Then building up to explore how the different cells can come together to form different tissue and organs in animals and plants. **Duration**: 18	See Chemistry/ Physics Overview	See Chemistry/ Physics Overview	**Topic**: Ecology and Inheritance **Resources**: PP, Practical on Showbie, **Focus**: Pupils will learn how environments can change, and also how the organisms in this environment adapt. Pupils will also explore how these changes in organisms can be passed on or even happen due to genetics. **Duration**: 18 lessons	See Chemistry/ Physics Overview	See Chemistry/ Physics Overview
8	See Chemistry/ Physics Overview	**Topic**: Digestion **Resources**: PP, Practical on Showbie **Focus**: Further knowledge of digestion process and the organs involved in this process. **Duration**: 6 lessons	**Topic**: Respiration **Resources**: PP, Practical on Showbie **Focus**: Strengthen knowledge of how energy is transferred in cells. Compare and contrast the structure and function of the organs involved. **Duration**: 3 lessons	See Chemistry/ Physics Overview	**Topic**: Evolution **Resources**: PP, Practical on Showbie **Focus**: Looking at natural selection to understand the importance of diversity within an ecosystem and relating to evolution. **Duration**: 4 lessons	**Topic**: Inheritance **Resources**: PP, Practical on Showbie **Focus**: Expanding on knowledge of reproduction and looking at genetics and genetic disorders. **Duration**: 4 lessons

9	See Chemistry/ Physics Overview	See Chemistry/ Physics Overview	**Topic**: Inside the Cell **Resources**: PowerPoints, Practical Activities on Showbie **Focus**: Pupils will apply the understanding of the cell biology topics they have previously studied in KS3 and apply it to new concepts, examples and practical work. There is a strong practical element in the topic to ensure pupils have all the practical skills required for GCSE science. **Duration**: 12 lessons	See Chemistry/ Physics Overview	See Chemistry/ Physics Overview	**Topic**: Body Systems **Resources**: PowerPoints, Practical Activities on Showbie **Focus**: Pupils will apply the previous learning from previous KS 3 topics on specialised tissue and organs to understanding the role of organ systems (numerous organs working together). There are also opportunities to explore how disease and ill health **Duration**:10 lessons

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10	See Chemistry/ Physics Overview	See Chemistry/ Physics Overview	**Topic**: Cells **Resources**: PowerPoints, Practical Activities on Showbie **Focus**: The topic of cells covers fundamental concepts such as the structure and function of animal and plant cells, including the roles of key organelles like the nucleus, mitochondria, and chloroplasts. Students learn about cell specialization, the differences between prokaryotic and eukaryotic cells, and the process of cell division through mitosis. The topic also introduces microscopy techniques for studying cells, and covers transport mechanisms like diffusion, osmosis, and active transport that allow substances to move in and out of cells. **Duration**: 14 lessons	**Topic**: Organisation **Resources**: PowerPoints, Practical Activities, Handouts on Showbie **Focus**: Pupils will learn about the structure and function of biological systems in living organisms, focusing on the concept of hierarchy from cells to tissues, organs, and organ systems. Key content includes the digestive system, the heart and circulatory system, and plant tissues like xylem and phloem. Skills developed include understanding the structure and function of enzymes, interpreting graphs and data related to enzyme activity, and explaining the role of different tissues in processes like digestion and transport in plants and animals. The topic also introduces practical skills such as investigating the effect of pH on enzyme activity and understanding the importance of transport systems in plants and animals for maintaining life. **Duration**: 13 Lessons	**Topic**: Infection and Response **Resources**: PowerPoints, Practical Activities, Handouts on Showbie **Focus**: This topic focuses on how the human body defends itself against disease, the types of pathogens (bacteria, viruses, fungi, and protists), and how they cause illness. It explores the body's immune response, including the role of white blood cells, antibodies, and vaccination. The topic also covers the development and use of antibiotics and the challenges of antibiotic resistance. Key content includes how diseases are spread, how the immune system responds, and the role of drugs in treating infections. Skills covered include understanding disease transmission, interpreting data on infection rates, evaluating the effectiveness of vaccinations, and investigating antimicrobial properties of substances through practical experiments **Duration**: 15 lessons	**Topic**: Homeostasis **Resources**: PowerPoints, Practical Activities, Handouts on Showbie **Focus**: This topic covers how the body maintains a stable internal environment, essential for the proper functioning of cells and organs. Key content includes the regulation of temperature, blood glucose levels, and water balance, along with the role of hormones in processes like the menstrual cycle and the endocrine system. The topic also explores the nervous system's role in responding to changes through reflex actions and the structure of the brain. Skills developed include understanding feedback mechanisms, interpreting data from experiments on reaction times and homeostasis, and explaining the effects of lifestyle factors on processes like blood sugar regulation. Practical skills include investigating human reaction times and analysing how different factors affect homeostatic balance. **Duration**: 15 lessons

11	**Topic**: Inheritance, Variation and Evolution **Resources**: PowerPoints, Practical Activities, Handouts on Showbie **Focus**: In this topic pupils learn how genetic information is passed from one generation to the next and how variation arises within populations. Key content includes the structure of DNA, the process of cell division (mitosis and meiosis), and the principles of inheritance, including dominant and recessive traits, genetic crosses, and Punnett squares. It also covers genetic disorders, sex determination, and the importance of variation for evolution through natural selection. Skills developed include interpreting genetic diagrams, predicting offspring traits, and understanding genetic probabilities. The topic also encourages evaluating ethical issues surrounding genetic engineering, cloning, and the use of biotechnology in medicine. **Duration**: 11 lessons	See Chemistry/ Physics Overview	See Chemistry/ Physics Overview	See Chemistry/ Physics Overview	See Chemistry/ Physics Overview	**Topic**: Ecology (Revision) **Resources**: PowerPoints, Practical Activities, Handouts on Showbie **Focus**: Through this topic pupils focus on understanding the interactions between organisms and their environment. Key topics include ecosystems, biodiversity, and the interdependence of organisms. Students learn about food chains, food webs, and energy flow, exploring how biotic and abiotic factors influence populations and communities. The unit also covers human impacts on ecosystems, such as deforestation, pollution, and climate change, as well as the importance of conservation efforts. Practical skills are developed through fieldwork investigations, data analysis, and interpreting ecological models to understand species distribution and abundance. **Duration**: 10 lessons