

S3 Biology Broad General Education Learning Plan

(Pupils will work through each unit and will have a research project at some point throughout the year)

Unit 1 – Cell reactions	Unit 2 – Body Works	Unit 3 – The Natural World
<p>Learning and Teaching Focus:</p> <p>In this unit, pupils will investigate cellular activities and how cells work.</p> <p>Specific topics include</p> <ul style="list-style-type: none"> • How cells multiply • What DNA is and what it does • Stem cell research • How cells make proteins and enzymes • How micro-organisms can be used in industry • Photosynthesis • How cells make energy 	<p>Learning and Teaching Focus:</p> <p>In this unit, pupils learn the various aspects of body systems and processes, gaining deeper understanding of how certain body systems work.</p> <p>Specific topics include</p> <ul style="list-style-type: none"> • Sexual and Asexual production in organisms. • Methods for growing plants • Uses of plants in industry • Genetics and characteristics • Growth and development of plants and animals • Homeostasis 	<p>Learning and Teaching Focus:</p> <p>In this unit, pupils learn about the wider aspects of life on earth. The topic includes looking at different ecosystems, animal and plant relationships and human impact on the planet.</p> <p>Specific topics include</p> <ul style="list-style-type: none"> • Animal and plant interdependence • Human population and its impact on Earth • Natural disasters • The nitrogen cycle • Farming and fertilisers • Adaptations and evolution • Animal behaviour
<p>Assessment Approach and evidence gathered:</p> <p>Pupils will be continually assessed in a number of practical areas including: safety in the lab, accuracy when carrying out experiments, problem solving skills and experimental design.</p> <p>Additionally evidence will be gathered in the form of written lab reports and an end of unit closed book assessment:</p> <p>Written Lab Write-up: Factor effecting rate of enzyme reaction Research Project: Pupil lead research task</p> <p><u>Home Learning Tasks</u></p> <p>Pupils will have a number written home learning tasks including</p> <p>Task 1: Cell Structure Task 2: DNA and proteins Task 3: Stem cell uses Task 4: Uses for proteins in cells Task 5: Uses for bacteria Task 6: Photosynthesis Task 7: Whole Unit Revision</p>	<p>Assessment Approach and evidence gathered:</p> <p>Pupils will be continually assessed in a number of practical areas including: safety in the lab, accuracy when carrying out experiments, problem solving skills and experimental design.</p> <p>Additionally evidence will be gathered in the form of written lab reports and an end of unit closed book assessment:</p> <p>Written Lab Write-up: Energy released from alcohols Research Project: Plants to Products</p> <p><u>Home Learning Tasks</u></p> <p>Pupils will have a number written home learning tasks including</p> <p>Task 1: Methods of reproduction in plants and animals Task 2: Plant growth and reproduction Task 3: Uses for plants Task 4: Genetics and family trees Task 5: Growth and development Task 6: Keeping the body stable</p>	<p>Assessment Approach and evidence gathered:</p> <p>Pupils will be continually assessed in a number of practical areas including: safety in the lab, accuracy when carrying out experiments, problem solving skills and experimental design.</p> <p>Additionally evidence will be gathered in the form of written lab reports and an end of unit closed book assessment:</p> <p>Written Lab Write-up: Metals vs Voltage in a cell Research Project: Overuse of Plastics in modern society</p> <p><u>Home Learning Tasks</u></p> <p>Pupils will have a number of research and written home learning tasks including</p> <p>Task 1: Types of animal behaviour Task 2: Human impact on the planet Task 3: Types of natural disaster Task 4: Growing plants Task 5: Fertiliser Task 6: Types of adaptation Task 7: Understanding animal behavior</p>
<p>Feedback linked to benchmarks</p> <ul style="list-style-type: none"> • Pupils will be able to identify key strengths and areas for improvement based on practical experimental skills 	<p>Feedback linked to benchmarks</p> <ul style="list-style-type: none"> • Pupils will be able to identify key strengths and areas for improvement based on practical experimental skills 	<p>Feedback linked to benchmarks</p> <ul style="list-style-type: none"> • Pupils will be able to identify key strengths and areas for improvement based on practical experimental skills

<ul style="list-style-type: none"> written feedback on lab reports Verbal and written feedback from homework exercises and assessments within the class Verbal feedback from classwork during lessons. <p>Key Skills : Education Scotland BGE Science Benchmarks</p> <p>I have collaborated on investigations into the process of photosynthesis and I can demonstrate my understanding of why plants are vital to sustaining life on Earth. SCN 3-02a</p> <p>Using a microscope, I have developed my understanding of the structure and variety of cells and of their functions. SCN 3-13a</p> <p>I have contributed to investigations into the different types of microorganisms and can explain how their growth can be controlled. SCN 3-13b</p> <p>I have extracted DNA and understand its function. I can express an informed view of the risks and benefits of DNA profiling. SCN 3-14b</p> <p>I can contribute to the design of an investigation to show the effects of different factors on the rate of aerobic respiration and explain my findings. SCN 4-02b</p> <p>By researching cell division, I can explain its role in growth and repair and can discuss how some cells can be used therapeutically. SCN 4-13a</p> <p>I have taken part in practical activities which involve the use of enzymes and microorganisms to develop my understanding of their properties and their use in industries. SCN 4-13b</p> <p>I can debate the moral and ethical issues associated with some controversial biological procedures. SCN 4-13c</p> <p>Literacy: LIT 4-21a I can use a range of strategies and resources independently and ensure that my spelling, including specialist vocabulary, is accurate.</p> <p>HWB HWB 4-20a I am investigating different careers/occupations, ways of working, and learning and training paths. I am gaining experience that helps me recognise the relevance of my learning, skills and interests to my future life.</p> <p>Numeracy: MNU 4-03a: Having recognised similarities between new problems and problems I have solved before, I can carry out the necessary calculations to solve problems set in unfamiliar contexts.</p>	<ul style="list-style-type: none"> written feedback on lab reports Verbal and written feedback from homework exercises and assessments within the class Verbal feedback from classwork during lessons. <p>Key Skills : Education Scotland BGE Science Benchmarks</p> <p>have explored the structure and function of organs and organ systems and can relate this to the basic biological processes required to sustain life. SCN 3-12a</p> <p>I have explored the role of technology in monitoring health and improving the quality of life. SCN 3-12b</p> <p>I have explored how the body defends itself against disease and can describe how vaccines can provide protection. SCN 3-13c</p> <p>I understand the processes of fertilisation and embryonic development and can discuss possible risks to the embryo. SCN 3-14a</p> <p>I have propagated and grown plants using a variety of different methods. I can compare these methods and develop my understanding of their commercial use. SCN 4-02a</p> <p>I can explain how biological actions which take place in response to external and internal changes work to maintain stable body conditions. SCN 4-12a</p> <p>Through investigation, I can compare and contrast how different organisms grow and develop. SCN 4-14a</p> <p>Through evaluation of a range of data, I can compare sexual and asexual reproduction and explain their importance for survival of species. SCN 4-14b</p> <p>I can use my understanding of how characteristics are inherited to solve simple genetic problems and relate this to my understanding of DNA, genes and chromosomes. SCN 4-14c</p> <p>Literacy: LIT 3-28a I can convey information, describe events, explain processes or concepts, and combine ideas in different ways.</p> <p>HWB HWB 3-38a Understand the positive effects that some substances can have on the mind and body but I am also aware of the negative and serious physical, mental, emotional, social and legal consequences of the misuse of substances.</p> <p>Numeracy: MTH 3-15b I can create and evaluate a simple formula representing information contained in a diagram, problem or statement.</p>	<ul style="list-style-type: none"> written feedback on lab reports Verbal and written feedback from homework exercises and assessments within the class Verbal feedback from classwork during lessons. <p>Key Skills : Education Scotland BGE Science Benchmarks</p> <p>I can sample and identify living things from different habitats to compare their biodiversity and can suggest reasons for their distribution. SCN 3-01a</p> <p>Through investigations and based on experimental evidence, I can explain the use of different types of chemicals in agriculture and their alternatives and can evaluate their potential impact on the world's food production. SCN 3-03a</p> <p>I can explain some of the processes which contribute to climate change and discuss the possible impact of atmospheric change on the survival of living things. SCN 3-05b</p> <p>I understand how animal and plant species depend on each other and how living things are adapted for survival. I can predict the impact of population growth and natural hazards on biodiversity. SCN 4-01a</p> <p>Through investigating the nitrogen cycle and evaluating results from practical experiments, I can suggest a design for a fertiliser, taking account of its environmental impact. SCN 4-03a</p> <p>Through investigation, I can explain how changes in learned behaviour due to internal and external stimuli are of benefit to the survival of species. SCN 4-12b</p> <p>Literacy: LIT 3-15a / LIT 4-15a I can make notes and organise them to develop my thinking, help retain and recall information, explore issues and create new texts, using my own words as appropriate.</p> <p>HWB HWB 3-20a I am investigating different careers/occupations, ways of working, and learning and training paths. I am gaining experience that helps me recognise the relevance of my learning, skills and interests to my future life.</p> <p>Numeracy: MTH 3-20b When analysing information or collecting data of my own, I can use my understanding of how bias may arise and how sample size can affect precision, to ensure that the data allows for fair conclusions to be drawn.</p>
---	---	---

Skills for learning, work and life

- Enterprise Skills – Planning & Organising
- Pupils will develop skills in team work and leadership by sharing tasks and responsibilities.
- When carrying out research tasks, pupils will be able to demonstrate the ability to communicate in different ways and use technology for learning
- Problem solving skills – throughout each unit pupils will be required to apply their knowledge to unfamiliar situations in order to solve problems.