



CURRICULUM PLAN

BIOLOGY (KS3)

BRAMHALL HIGH SCHOOL

Curriculum Intent

It is our intention as Science Department to provide all children, regardless of their prior learning, background, or special needs, with a broad and balanced science curriculum. We aim to promote positive attitudes to science as an interesting and enjoyable subject. To develop pupils` awareness of how science impacts on their everyday life.

Pupils are encouraged to develop their practical skills, to work collaboratively and to query and evaluate scientific evidence.

We aim to cultivate an environment conducive to learning. We encourage and value our pupils` opinions, ideas, and contributions. Similarly, we expect pupils to strive for excellence and respect the contributions of other adults and their peers. Our intention is for pupils to enjoy their learning, to be resilient, make progress and achieve at an appropriate level.

Academic Year: 2023-2024

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YEAR 7					
Term	Programme of Learning	Links to the National Curriculum / Specification / Additional	Assessments	What extra learning opportunities are planned?	Disciplinary Literacy
Term 1a	7A Cells, tissues, organs and systems - Life processes - Organs - Tissues - Microscopes	Cells and organisation Experimental skills and investigations Unit conversion	CPR – Microscope related question (s)	Basic magnification calculations (MS 2h). Research the work of Hooke and the development of microscope technology.	Tier 1: Microscope, focus Tier 2: magnification, *organism Tier 3: Objective lens, eye piece lens
Term 1b	7A Cells, tissues, organs and systems - Cells - Organ systems 7B Sexual reproduction in animals - Animal sexual reproduction	Cells and organisation Reproduction Analysis and evaluation	7A End of topic test	Identify whether a cell is from a plant or an animal using features visible in the picture or from microscope observations. Interpret percentile growth charts to illustrate the stage of puberty that the growth spurt occurs in males and females (MS 4a).	Tier 1: egg cell, sperm cell. Tier 2: *fertilisation, menstruation, Tier 3: Gametes, fallopian tube

<p>Term 2a</p>	<p>7B Sexual reproduction in animals</p> <ul style="list-style-type: none"> - Reproductive organs - Becoming pregnant - Gestation and birth - Growing up 	<p>Reproduction Analysis and evaluation Menstrual cycle</p>	<p>CPR – Fertilisation related question(s)</p> <p>7B End of topic test</p>	<p>Link stages of the menstrual cycle to changes in oestrogen and progesterone levels and describe the role of testosterone.</p> <p>Compare the relative sizes of the egg and sperm cell.</p>	<p>Tier 1: Puberty, hormones, periods Tier 2: Adolescence, cervix, menstrual cycle Tier 3: Sperm ducts, oviduct, *cilia.</p>
<p>Term 2b</p>	<p>7C Muscles and bones</p> <ul style="list-style-type: none"> - Muscles and breathing - Muscles and blood - The skeleton - Muscles and moving - Drugs 	<p>The skeletal and muscular systems Measurement</p>	<p>7C End of topic test</p>	<p>Looking at microscope slides of muscles to show fibres and explain how they function.</p> <p>Research the effects of diseases such as arthritis or osteoporosis on joints and bones.</p>	<p>Tier 1: skeleton, joints Tier 2: Diaphragm, circulatory, Tier 3: *Tissues, organ system</p>

<p>Term 3a</p>	<p>7D Ecosystems - Variation - Adaptations - Effects of the environment</p>	<p>Measurement Effect of human activity</p>	<p>End of Year 7 Assessment</p>	<p>Convert pyramids of number into pyramids of biomass.</p>	<p>Tier 1: Habitat, food chain. Tier 2: predator, prey. Tier 3: Energy flow, *bioaccumulation</p>
<p>Term 3b</p>	<p>7D Ecosystems - Effects on the environment - Transfers in food chains</p>	<p>Relationships in an ecosystem Experimental skills and investigations Sampling</p>	<p>CPR - Ecosystem related question(s) 7D End of topic test</p>	<p>Investigate some parasitic and mutualistic relationships to illustrate interdependence.</p>	<p>Tier 1: Species, animals, plants. Tier 2: Pesticides, herbicides, endangered, extinct. Tier 3: Quadrat, *genus, kingdoms.</p>

YEAR 8

Term	Programme of Learning	Links to the National Curriculum / Specification / Additional	Assessments	What extra learning opportunities are planned?	Disciplinary Literacy
Term 1a	8A Food and nutrition <ul style="list-style-type: none"> - Nutrients - Uses of nutrients - Balanced diets - Digestion 	Nutrition and digestion Content of diet Scientific attitudes	CPR – Nutrition related question(s)	Explain why a specific individual might need a modified diet.	Tier 1: Diet, vitamins Tier 2: *Nutrients, obesity, Tier 3: Joules, deficiency disease.
Term 1b	8A Food and nutrition <ul style="list-style-type: none"> -Absorption 8B Plants and their reproduction <ul style="list-style-type: none"> - Classification and biodiversity - Types of reproduction 	Photosynthesis The development of scientific thinking	8A End of topic test	The five kingdom method of classification.	Tier 1: *Photosynthesis, products. Tier 2: Conifers, species. Tier 3: Classification, biodiversity,

<p>Term 2a</p>	<ul style="list-style-type: none"> - Pollination - Fertilisation and dispersal - Germination and growth <p>8C Breathing and respiration.</p> <ul style="list-style-type: none"> - Gas exchange system 	<p>Gas exchange systems Cellular respiration Measurement</p>	<p>CPR – Plant reproduction question</p> <p>8B End of topic test</p>	<p>Show and interpret spirometer output data.</p>	<p>Tier 1: Photosynthesis, products. Tier 2: Conifers, species. Tier 3: Classification, *biodiversity,</p>
<p>Term 2b</p>	<p>8C Breathing and respiration</p> <ul style="list-style-type: none"> - Getting oxygen - Comparing gas exchange - Anaerobic respiration 	<p>Gas exchange systems Cellular respiration Measurement</p>	<p>8C End of topic test</p>	<p>Compare abundance of mitochondria in different cell types.</p>	<p>Tier 1: Breathing, heart attack. Tier 2: diffusion, surface area. Tier 3: Gas exchange, *haemoglobin</p>

CURRICULUM PLAN – BIOLOGY (KS3)

<p>Term 3a</p>	<p>8D Unicellular organisms - Unicellular or multicellular - Microscopic fungi</p>	<p>Cells and organisation Experimental skills</p>		<p>Investigate factors which affect the rate of diffusion.</p>	<p>Tier 1: Bacteria, algae, Tier 2: Pasteurisation, diffusion. Tier 3: chromosome, *flagella</p>
<p>Term 3b</p>	<p>8D Unicellular organisms - Bacteria - Protoctists - Decomposers and carbon</p>	<p>Cells and organisation Experimental skills</p>	<p>Year 8 exams</p>	<p>Research the work of Pasteur.</p>	<p>Tier 1: Bacteria, algae, Tier 2: Pasteurisation, *diffusion. Tier 3: chromosome, flagella</p>

YEAR 9

Term	Programme of Learning	Links to the National Curriculum / Specification / Additional	Assessments	What extra learning opportunities are planned?	Disciplinary Literacy
Term 1a	9A Genetics and evolution - Environmental variation - Inherited variation - DNA - Genes and extinction	Inheritance, chromosomes, DNA and genes Analysis and evaluation	CPR – inheritance related question 9A End of topic test	Research the idea of nature verses nurture illustrated with identical twins separated at birth.	Tier 1: Bar chart. Tier 2: Species, *adaptation, Tier 3: Continuous, discontinuous,
Term 1b	9A Genetics and evolution - Natural selection 9D Biology transition to GCSE Health and disease - Diseases - Control systems	Health Experimental skills and investigations	9D End of topic test	Use of phylogenetic trees to show evolutionary relationships.	Tier 1: starch, breakdown. Tier 2: Substrates, *optimum, Tier 3: Enzymes, active site.

<p>Term 2a</p>	<p>9D Biology transition to GCSE Health and disease</p> <ul style="list-style-type: none"> - Testing medicines - Ecology - In and out 	<p>Health The development of scientific thinking</p>	<p>Year 9 exams</p>	<p>Research the evidence for the benefit of prebiotic and probiotics foods.</p>	<p>Tier 1: starch, breakdown. Tier 2: Substrates, optimum, Tier 3: *Enzymes, active site.</p>
<p>Term 2b</p>	<p>SB1 Key concepts in biology</p> <ul style="list-style-type: none"> - Microscopes - Plant and animal cells - Specialised cells - Inside bacteria - Enzymes and nutrition - Testing foods 	<p>Cell biology Experimental skills and strategies</p>	<p>CPR – Cells and microscope related question</p> <p>1.6 Investigate biological specimens using microscopes</p>	<p>Research how an electron microscope works.</p>	<p>Tier 2: Turgid. Tier 3: hypertonic, hypotonic, and *isotonic.</p>

CURRICULUM PLAN – BIOLOGY (KS3)

<p>Term 3a</p>	<p>SB1 Key concepts in biology</p> <ul style="list-style-type: none"> - Enzyme action - Enzyme activity - Transporting substances <p>SB2 Cells and control</p> <ul style="list-style-type: none"> - Mitosis - Growth in animals - Growth in plants 	<p>Cell biology Experimental skills Units and symbols</p>	<p>B1 End of topic test</p> <p>1.10 Investigate the effect of pH on enzyme activity 1.16 Investigate osmosis in potatoes</p>	<p>Research the induced fit hypothesis.</p> <p>Applications of enzyme technology in industry.</p> <p>Research the causes of cancer and the different types of tumour.</p>	<p>Tier 1: Growth, cancer. Tier 2: tumours, malignant, Tier 3: Cell cycle, *mitosis,</p>
<p>Term 3b</p>	<p>SB2 Cells and control</p> <ul style="list-style-type: none"> - Stem cells -The brain - Brain and spinal cord problems - The nervous system -The eye -Neurotransmitter speeds 	<p>Coordination and control Experimental skills and strategies</p>	<p>CPR – Nervous system related question</p> <p>B2 End of topic test</p>	<p>Research the effects of different drugs on neurotransmitters.</p>	<p>Tier 1: Growth, cancer. Tier 2: *tumours, malignant, Tier 3: Cell cycle, mitosis,</p>