



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

Term 2a	7B Sexual reproduction in animals - Reproductive organs - Becoming pregnant - Gestation and birth - Growing up	Reproduction Analysis and evaluation Menstrual cycle	CPR – Fertilisation related question(s) 7B End of topic test	Link stages of the menstrual cycle to changes in oestrogen and progesterone levels and describe the role of testosterone. Compare the relative sizes of the egg and sperm cell.	Tier 1: Puberty, hormones, periods Tier 2: Adolescence, cervix, menstrual cycle Tier 3: Sperm ducts, oviduct, *cilia.
Term 2b	7C Muscles and bones - Muscles and breathing - Muscles and blood - The skeleton - Muscles and moving - Drugs	The skeletal and muscular systems Measurement	7C End of topic test	Looking at microscope slides of muscles to show fibres and explain how they function. Research the effects of diseases such as arthritis or osteoporosis on joints and bones.	Tier 1: skeleton, joints Tier 2: Diaphragm, circulatory, Tier 3: *Tissues, organ system

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

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 - 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 -Absorption 8B Plants and their reproduction - 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,

Term 2a	- Pollination - Fertilisation and dispersal - Germination and growth 8C Breathing and respiration. - Gas exchange system	Gas exchange systems Cellular respiration Measurement	CPR – Plant reproduction question 8B End of topic test	Show and interpret spirometer output data.	Tier 1: Photosynthesis, products. Tier 2: Conifers, species. Tier 3: Classification, *biodiversity,
Term 2b	8C Breathing and respiration - Getting oxygen - Comparing gas exchange - Anaerobic respiration	Gas exchange systems Cellular respiration Measurement	8C End of topic test	Compare abundance of mitochondria in different cell types.	Tier 1: Breathing, heart attack. Tier 2: diffusion, surface area. Tier 3: Gas exchange, *haemoglobin

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

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 9B Plant Growth - Reactions in plants - Plant adaptations	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.
Term 2a	9B Plant Growth - Plant products - Growing crops - Farming problems	The development of scientific thinking	Year 9 exams	Investigate the effect of light on the rate of photosynthesis.	Tier 1: Carbon dioxide. Tier 2: *Optimum.

	- Organic farming				Tier 3: Chlorophyll, palisade cells.
Term 2b	SB1 Key concepts in biology - Microscopes - Plant and animal cells - Specialised cells - Inside bacteria - Enzymes and nutrition - Testing foods	Cell biology Experimental skills and strategies	CPR – Cells and microscope related question 1.6 Investigate biological specimens using microscopes	Research how an electron microscope works.	Tier 2: Turgid. Tier 3: hypertonic, hypotonic, and *isotonic.
Term 3a	SB1 Key concepts in biology - Enzyme action - Enzyme activity - Transporting substances SB2 Cells and control - Mitosis - Growth in animals - Growth in plants	Cell biology Experimental skills Units and symbols	B1 End of topic test 1.10 Investigate the effect of pH on enzyme activity 1.16 Investigate osmosis in potatoes	Research the induced fit hypothesis. Applications of enzyme technology in industry. Research the causes of cancer and the different types of tumour.	Tier 1: Growth, cancer. Tier 2: tumours, malignant, Tier 3: Cell cycle, *mitosis,

Term 3b	SB2 Cells and control - Stem cells -The brain - Brain and spinal cord problems - The nervous system -The eye -Neurotransmitter speeds	Coordination and control Experimental skills and strategies	CPR – Nervous system related question B2 End of topic test	Research the effects of different drugs on neurotransmitters.	Tier 1: Growth, cancer. Tier 2: *tumours, malignant, Tier 3: Cell cycle, mitosis,
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