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.

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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	7A Bio CPR	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 Summary test Assessment on first biology, chemistry and physics units	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	7B Summary 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 Biology CPR 7C Summary test Assessment on second biology, chemistry and physics units	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 exam	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	7D Summary 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		Explain why a specific individual might need a modified diet.	**Tier 1:** Diet, vitamins **Tier 2:** *Nutrients, obesity, **Tier 3: J**oules, 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 Summary test Assessment on first biology, chemistry and physics units	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	8B Biology CPR 8B Summary 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	Assessment on second biology, chemistry and physics units 8C Summary test	Compare abundance of mitochondria in different cell types.	**Tier 1:** Breathing, heart attack. **Tier 2:** diffusion, surface area. **Tier 3:** Gas exchange, *haemoglobin

Term 3a	**8D Unicellular organisms** - Unicellular or multicellular - Microscopic fungi	Cells and organisation Experimental skills	8D Biology CPR	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 - Natural selection	Inheritance, chromosomes, DNA and genes Analysis and evaluation	9A Biology CPR 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	**9B Plant Growth** - Reactions in plants - Plant adaptations	Health Experimental skills and investigations	9B 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.
	- Plant products - Growing crops - Farming problems - Organic farming	The development of scientific thinking		Investigate the effect of light on the rate of photosynthesis.	**Tier 1: Carbon dioxide.** **Tier 2: *Optimum.** **Tier 3: Chlorophyll, palisade cells.**

Term 2a and 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	Year 9 exams 9T Biology CPR 1 1.6 Investigate biological specimens using microscopes	Research how an electron microscope works.	**Tier 2:** Turgid. **Tier 3:**, hypertonic, hypotonic, and *isotonic.
Term 3a and 3b	**SB1 Key concepts in biology** - Enzyme action - Enzyme activity - Transporting substances	Cell biology Experimental skills Units and symbols	9T Biology CPR 2 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,