



CURRICULUM PLAN

TRIPLE SCIENCE BIOLOGY
(EDEXCEL 9-1)
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 10					
Term	Programme of Learning	Links to the National Curriculum / Specification / Additional	Assessments	What extra learning opportunities are planned?	Disciplinary Literacy
Term 1a	SB3 Genetics <ul style="list-style-type: none"> - Sexual reproduction - Asexual reproduction - Meiosis - DNA - Protein synthesis - Genetic variants and phenotypes 	Evolution, inheritance and variation Analysis and evaluation	CPR – Genetics related question CPR – Protein synthesis related question	Investigate correlations between different variation features, e.g. arm length and height. Research the methods involved in the human genome project.	Tier 1: DNA, gene. Tier 2: Embryo, mutation. Tier 3: *Meiosis, gametes.
Term 1b	SB3 Genetics <ul style="list-style-type: none"> - Mendel - Alleles - Inheritance - Multiple & missing alleles - Gene mutations - Variation 	Evolution, inheritance and variation Analysis and evaluation	CPR - Inheritance related question CPR – Selective breeding/genetic engineering related question B3 End of topic test	Research the ABO blood groups.	Tier 1: Sexual, gene. Tier 2: dominant, recessive. Tier 3: *Homozygous, heterozygous.

CURRICULUM PLAN – TRIPLE
BIOLOGY (EDEXCEL 9-1)

<p>Term 2a</p>	<p>SB4 Natural selection and genetic modification</p> <ul style="list-style-type: none"> - Human evolution - Darwin's theory - Development of Darwin's theory - Classification - Breeds and varieties 	<p>Evolution, inheritance and variation The development of scientific thinking</p>	<p>CPR – Fertilisers and biological control related question</p> <p>B4 End of topic test</p>	<p>Contrast the theory of natural selection from Darwin and Wallace with the work of Lamarck.</p>	<p>Tier 1: Handy man, survival of the fittest. Tier 2: *Evolution, natural selection, species, common ancestor. Tier 3: Human genome project, antibiotic resistance.</p>
<p>Term 2b</p>	<p>SB4 Natural selection and genetic modification</p> <ul style="list-style-type: none"> - Tissue culture - Genes in agriculture and medicine - GM and agriculture - Fertilisers and biological control <p>SB5 Health, disease and the development of medicines</p> <ul style="list-style-type: none"> - Health and disease - Non-communicable diseases - Cardiovascular disease 	<p>Evolution, inheritance and variation The development of scientific thinking</p>	<p>Year 10 Exams</p> <p>CPR – Disease related question</p>	<p>Research the current status of growing genetically modified crops in the UK and other countries.</p>	<p>Tier 1: Disease. Tier 2: Artificial, extinction, *differentiation. Tier 3: Selective breeding, genetic engineering, restriction enzymes.</p>

CURRICULUM PLAN – TRIPLE
BIOLOGY (EDEXCEL 9-1)

<p>Term 3a</p>	<p>SB5 Health, disease and the development of medicines</p> <ul style="list-style-type: none"> - Pathogens - Spreading pathogens - Virus lifecycles - Immune system - Monoclonal antibodies 	<p>Health, disease and the development of medicines Analysis and evaluation</p>	<p>CPR – Virus related question</p> <p>CPR – Photosynthesis related question</p> <p>5.18B Investigate the effects of antiseptics,</p> <p>B5 End of topic test</p>	<p>Research recommended levels of exercise, dietary and alcohol intake.</p> <p>Research values for high and low blood pressure.</p>	<p>Tier 1: Health, disease. Tier 2: Infection, virus, bacteria. Tier 3: Ebola, *communicable, malaria, vectors.</p>
<p>Term 3b</p>	<p>SB6 Plant structure and their function</p> <ul style="list-style-type: none"> - Photosynthesis - Photosynthesis factors - Absorbing water - Absorbing minerals - Transpiration - Translocation - Plant adaptations - Plant hormones - Uses of plant hormones 	<p>Photosynthesis</p>	<p>CPR – Transport in plants related questions</p> <p>CPR – Plant hormone related question</p> <p>B6 End of topic test</p>	<p>Investigate the effect of different coloured light on the rate of photosynthesis.</p>	<p>Tier 1: Light, carbon dioxide, Tier 2: Optimum. Tier 3: *Photosynthesis, chloroplasts, chlorophyll, palisade cells.</p>

YEAR 11

Term	Programme of Learning	Links to the National Curriculum / Specification / Additional	Assessments	What extra learning opportunities are planned?	Disciplinary Literacy
Term 1a	SB7 Animal coordination, control and homeostasis - Hormones - Hormonal control of metabolic rate - The menstrual cycle - Hormones and the menstrual cycle - Control of blood glucose	Coordination and control	CPR – Hormone related question CPR – Homeostasis related question	Research the effects on the body if the hormones are not produced at the correct level. Calculate sugar intakes of different foods and how starchy foods increase blood glucose levels.	Tier 1: Puberty, period, contraception. Tier 2: Menstruation, ovulation, *fertilisation. Tier 3: Oestrogen, progesterone, negative feedback.
Term 1b	SB7 Animal coordination, control and homeostasis - Type 2 diabetes - Thermoregulation - Osmoregulation - The kidneys	Coordination and control	CPR – Kidney system related question	Research the long-term side effects of diabetes type 1 and type 2.	Tier 1: Tier 2: Hormone. Tier 3: *Endocrine glands, pancreas, insulin, glucagon, metabolic rate, glycogen.

CURRICULUM PLAN – TRIPLE
BIOLOGY (EDEXCEL 9-1)

<p>Term 2a</p>	<p>SB8 Exchange and transport in animals</p> <ul style="list-style-type: none"> - Efficient transport and exchange - Factors affecting diffusion - The circulatory system - The heart - Cellular respiration 	<p>Transport systems Analysis and evaluation</p>	<p>CPR – Circulatory system related question</p> <p>CPR – Respiration related question</p> <p>8.11 Investigate the rate of respiration</p> <p>B8 End of topic test</p>	<p>Interpret heart traces under different conditions.</p> <p>Explain why specific cell types have more mitochondria than others.</p>	<p>Tier 1: Glucose, oxygen, carbon dioxide.</p> <p>Tier 2: Heart rate, *respiration</p> <p>Tier 3: Exothermic, aerobic, anaerobic, mitochondria, lactic acid.</p>
<p>Term 2b</p>	<p>SB9 Ecosystems and material cycles</p> <ul style="list-style-type: none"> - Ecosystems - Energy transfer - Abiotic factors and communities - Biotic factors and communities - Assessing pollution 	<p>Transport systems Analysis and evaluation</p>	<p>Year 11 Mocks</p> <p>9.5 Investigate the relationship between organisms</p>	<p>Show examples, e.g. chicken / fish farming, to show ways to limit energy loss at trophic levels.</p>	<p>Tier 1: Disease, fossil fuels.</p> <p>Tier 2: Ecosystem, community, populations.</p> <p>Tier 3: *Biotic, abiotic, quadrat.</p>

CURRICULUM PLAN – TRIPLE
BIOLOGY (EDEXCEL 9-1)

<p>Term 3a</p>	<p>SB9 Ecosystems and material cycles</p> <ul style="list-style-type: none"> - Parasitism & mutualism - Biodiversity & humans - Preserving biodiversity - Food security - The water cycle - The carbon cycle - The nitrogen cycle - Rates of decomposition 	<p>Ecosystems Vocabulary, units, symbols and nomenclature</p>	<p>B9 End of topic test</p>	<p>Study a specific endangered animal to explain the cause of its population decrease.</p>	<p>Tier 1: Conservation. Tier 2: Indigenous, reforestation, captivity. Tier 3: Food security, biofuels, biodiversity, *eutrophication, decomposition,</p>
<p>Term 3b</p>	<p>Consolidation activities Core Practical Review</p>				