



# CURRICULUM PLAN

COMBINED 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.

## YEAR 10

Term	Programme of Learning	Links to the National Curriculum / Specification / Additional	Assessments	What extra learning opportunities are planned?	Disciplinary Literacy
<b>Term 1a</b>	<b>SB2 Cells and control</b> - Mitosis - Growth in animals - Growth in plants - Stem cells	Coordination and control Experimental skills and strategies	CPR – Nervous system related question	Research the causes of cancer and the different types of tumour.	<b>Tier 1:</b> Growth, cancer. <b>Tier 2:</b> tumours, malignant, <b>Tier 3:</b> Cell cycle, *mitosis,
<b>Term 1b</b>	<b>SB2 Cells and control</b> - The nervous system - Neurotransmitter speeds	Coordination and control Experimental skills and strategies	B2 End of topic test	Research the effects of different drugs on neurotransmitters.	<b>Tier 1:</b> Growth, cancer. <b>Tier 2:</b> *tumours, malignant, <b>Tier 3:</b> Cell cycle, mitosis,
<b>Term 2a</b>	<b>CB3 Genetics</b> - Meiosis - DNA - Alleles - Inheritance - Gene mutations - Variation	Evolution, inheritance and variation Analysis and evaluation	CPR – Genetic related question  B3 end of topic test	Investigate correlations between different variation features, e.g. arm length and height.	<b>Tier 1:</b> DNA, gene. <b>Tier 2:</b> Embryo, mutation. <b>Tier 3:</b> *Meiosis, gametes.

				Research the methods involved in the human genome project.	
<b>Term 2b</b>	<b>CB4 Natural selection and genetic modification</b> <ul style="list-style-type: none"> <li>- Evidence for human evolution</li> <li>- Darwin's theory</li> <li>- Classification</li> <li>- Breeds and varieties</li> <li>- Genes in agriculture and medicine</li> <li>- GM and agriculture</li> </ul>	Evolution, inheritance and variation The development of scientific thinking	CPR – Selective breeding/genetic engineering related question  B4 end of topic test	Contrast the theory of natural selection from Darwin and Wallace with the work of Lamarck.	<b>Tier 1:</b> Handy man, survival of the fittest. <b>Tier 2:</b> *Evolution, natural selection, species, common ancestor. <b>Tier 3:</b> Human genome project, antibiotic resistance.

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<b>Term 3a</b>	<b>CB5 Health, disease and the development of medicines</b> <ul style="list-style-type: none"> <li>- Health and disease</li> <li>- Non-communicable diseases</li> <li>- Cardiovascular disease</li> <li>- Pathogens</li> </ul>	Health, disease and the development of medicines Analysis and evaluation	CPR – disease related question	Research recommended levels of exercise, dietary and alcohol intake.	<b>Tier 1:</b> Health, disease. <b>Tier 2:</b> Infection, virus, bacteria. <b>Tier 3:</b> Ebola, *communicable, malaria, vectors.
<b>Term 3b</b>	<b>CB5 Health, disease and the development of medicines</b> <ul style="list-style-type: none"> <li>- Spreading pathogens</li> <li>- Physical and chemical barriers</li> <li>- The immune system</li> <li>- Antibiotics</li> </ul>		Year 10 exams  B5 end of topic test	Research values for high and low blood pressure.	<b>Tier 1:</b> Health, disease. <b>Tier 2:</b> Infection, virus, bacteria. <b>Tier 3:</b> Ebola, communicable, malaria, *vectors.

## YEAR 11

Term	Programme of Learning	Links to the National Curriculum / Specification / Additional	Assessments	What extra learning opportunities are planned?	Disciplinary Literacy
<b>Term 1a</b>	<b>CB6 Plant structures and their functions</b> <ul style="list-style-type: none"> <li>-Photosynthesis</li> <li>-Factors that affect photosynthesis</li> <li>- Absorbing water</li> <li>- Absorbing mineral ions</li> <li>- Transpiration</li> <li>- Translocation</li> </ul>	Photosynthesis	CPR – Photosynthesis related question  B6 end of topic test	Investigate the effect of different coloured light on the rate of photosynthesis.	<b>Tier 1:</b> Light, <b>Tier 2:</b> Optimum. <b>Tier 3:</b> *Photosynthesis, chloroplasts.
<b>Term 1b</b>	<b>CB7 Animal coordination, control and homeostasis</b> <ul style="list-style-type: none"> <li>- Hormones</li> <li>- Hormonal control of metabolic rate</li> <li>- The menstrual cycle</li> <li>- Hormones and the menstrual cycle</li> <li>- Control of blood glucose - Type 2 diabetes</li> </ul>	Coordination and control Vocabulary, units, symbols and nomenclature  Transport systems Analysis and evaluation	CPR – Hormone related question B7 End of topic test  8.11 Investigate the rate of respiration in living organisms	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.	<b>Tier 1:</b> Puberty, period, contraception. <b>Tier 2:</b> Menstruation, ovulation, *fertilisation. <b>Tier 3:</b> Oestrogen, progesterone, negative feedback.

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<b>Term 2a</b>	<b>CB8 Exchange and transport in animals</b> <ul style="list-style-type: none"> <li>- Efficient transport and exchange</li> <li>- The circulatory system</li> <li>- The heart</li> <li>- Cellular respiration</li> </ul>	Transport systems Analysis and evaluation	Year 11 Mocks B8 End of topic test  CPR – Circulatory system related question	Interpret heart traces under different conditions.  Explain why specific cell types have more mitochondria than others.	<b>Tier 1:</b> Glucose, oxygen, carbon dioxide. <b>Tier 2:</b> Heart rate, *respiration. <b>Tier 3:</b> exothermic, aerobic, anaerobic, mitochondria, lactic acid.
<b>Term 2b</b>	<b>CB9 Ecosystems and material cycles</b> <ul style="list-style-type: none"> <li>- Ecosystems</li> <li>- Abiotic factors and communities</li> <li>- Biotic factors and communities</li> <li>- Parasitism &amp; mutualism</li> <li>- Biodiversity &amp; humans</li> </ul>	Ecosystems Vocabulary, units, symbols and nomenclature	CPR - Biodiversity related question  9.5 Investigate the relationship between organisms	Show examples, e.g. chicken / fish farming, to show ways to limit energy loss at trophic levels.	<b>Tier 1:</b> Disease, fossil fuels. <b>Tier 2:</b> Ecosystem, community, populations. <b>Tier 3:</b> *Biotic, abiotic, quadrat.

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<b>Term 3a</b>	<b>CB9 Ecosystems and material cycles</b> <ul style="list-style-type: none"> <li>- Preserving biodiversity</li> <li>- The water cycle</li> <li>- The carbon cycle</li> <li>- The nitrogen cycle</li> </ul>	Ecosystems Vocabulary, units, symbols and nomenclature	Yr 11 Mocks Paper 2 B9 End of topic test	Study a specific endangered animal to explain the cause of its population decrease.	<b>Tier 1:</b> Conservation. <b>Tier 2:</b> Indigenous, reforestation, captivity. <b>Tier 3:</b> Food security, biofuels, biodiversity, *eutrophication, decomposition.
<b>Term 3b</b>	<b>Revision of key concepts</b>				