Science KS4 Curriculum Intent, Implementation and Impact Overview

	Year: 11 Subject: Separate Biology IMPLEMENTATION					
INTENT **(AQA GCSE Biology (9-1) GCSE specification coverage** key concepts and skills ('Big ideas')	**Half Term 1 (7)** **Context:** B12 – Homeostasis in Action B13 – Inheritance **Key Vocabulary:** Homeostasis, urea, kidney, dialysis, artificial, transplant, thermoregulation, vasoconstriction, vasodilation Asexual, sexual, reproduction, meiosis, DNA synthesis, inheritance, genome, mutation, genetic disorders, screening **Prior Learning / LTM:** Y7 Genes, Y8 Genes, Y9 Bio 2, GCSE B9, GCSE B8 **Cultural Capital:** Controlling body temperature. Dialysis – the kidney. Malaria. Inheritance and genetic disorders.	**Half Term 2 (7)** **Context:** B14 – Variation B15 – Genetics and Evolution **Key Vocabulary:** Variation, environmental, genetic, natural selection, mutation, selective breeding, genetic engineering, cloning Evolution, natural selection, speciation, extinction, antibiotic resistance, classification, domain, archaea **Prior Learning / LTM:** Y7 Ecosystems, Y7 Genes, Y8 Genes, Y9 Bio 2, GCSE B13, GCSE B5, GCSE B6 **Cultural Capital:** Variation of life. Natural selection – evolution. Selective breeding – crops and agriculture. Cloning – Dolly the sheep. Ethics of genetic technology. Theories of evolution Extinction and fossils. Antibiotic resistance.	**Half Term 3 (7)** **Context:** B15 – Genetics and Evolution B16 – Adaptations, interdependence, and competition **Key Vocabulary:** Communities, interdependence, abiotic, biotic, quadrat, abundance, distribution, transect, quantitative, competition, adaptations, extremophiles, camouflage **Prior Learning / LTM:** Y7 Ecosystems, Y7 Genes, Y8 Genes, Y9 Bio 2, GCSE B5, GCSE B6, GCSE B1, GCSE B3, GCSE B13, GCSE B14 **Cultural Capital:** Theories of evolution. Antibiotic resistance. Ecology and communities. Biodiversity.	**Half Term 4 (6)** **Context:** B16 – Adaptations, interdependence, and competition B17 – Organising an ecosystem B18 – Biodiversity and ecosystems **Key Vocabulary:** Biomass, producers, consumers, trophic level, decomposers, decay, carbon cycle Biodiversity, population, pollution, formulation, deforestation, greenhouse gases, global warming, incident energy, agriculture, efficiency, sustainability, **Prior Learning / LTM:** Y7 Ecosystems, Y8 Ecosystems, Y8 Genes, GCSE B14, GCSE B15, GCSE B8, GCSE B9 **Cultural Capital:** Biodiversity. Food chains and impact on environment. Materials, water, and carbon cycles.	**Half Term 5 (5)** **Context:** B18 – Biodiversity and ecosystems **Key Vocabulary:** Biodiversity, population, pollution, formulation, deforestation, greenhouse gases, global warming, incident energy, agriculture, efficiency, sustainability, **Prior Learning / LTM:** Y7 Ecosystems, Y8 Ecosystems, Y8 Genes, GCSE B14, GCSE B15, GCSE B8, GCSE B9, GCSE B16, GCSE B17 **Cultural Capital:** Human population – explosion and migration. Pollution – air, land, water, deforestation, peat destruction. Impacts on the environment. Food security and sustainable food production.	**Half Term 6 (6)** **N/A**
All material in the Universe is made of very small particles				x		
Objects can affect other objects at a distance			x	x	x	
Changing the movement of an object requires a net force to be acting on it						
The total amount of energy in the Universe is always the same				x	X	

The composition of the Earth and its atmosphere		X		X	x	
Our solar system is a very small part of one of millions of galaxies in the Universe						
Organisms are organised on a cellular basis	x	x	x			
Organisms require a supply of energy and materials	x		x	x	X	
Genetic information is passed down from one generation of organisms to another	x	x	x			
The diversity of organisms, living and extinct, is the result of evolution		x	x	x	x	
Apply knowledge and understanding to explain observations.	x	x	X	X	X	
Use different types of scientific enquiry to answer scientific questions.	x	x	X	X	X	
Use technical terminology with confidence accurately and precisely.	x	x	X	X	X	
Apply mathematical knowledge to scientific understanding.	x	x	X	X	X	
Awareness of some of the social and economic implications of science		x	x	x	x	
IMPACT	Assessment: Trial exam 1 – Paper 1 Inheritance/Punnett MP Maths skills 1 Progression to KS5: 5.16 Plant responses 2.6 Cell division 6.19 Genetics of living systems 6.20 Patterns of inheritance and variation 6.21 Manipulating genomes Scientific enquiry	Assessment: Trial exam 2 Evolution/Fossils MP Maths skills 2 Progression to KS5: 6.19 Genetics of living systems 6.20 Patterns of inheritance and variation 6.22 Cloning and biotechnology 4.10 Classification and evolution Scientific enquiry	Assessment: Trial exam 3 Quadrat/Abiotic/Biotic MP Maths skills 3 Progression to KS5: 4.10 Classification and evolution 4.11 Biodiversity 6.23 Ecosystems Scientific enquiry.	Assessment: Trial exam 4 Carbon Cycle MP Maths skills 4 Progression to KS5: 6.24 Population and sustainability 6.23 Ecosystems 4.11 Biodiversity 6.22 Cloning and biotechnology Scientific enquiry.	Assessment: **External GCSE examinations May/June (AQA)** **Paper 1** **Paper 2**	

Cultural Capital is the body of knowledge a student needs so that they can flourish in the future and not be left behind. LTM = Long Term Memory.