Biology KS5 Curriculum Intent, Implementation and Impact Overview

	Year: 12 Subject: Biology IMPLEMENTATION					
INTENT (**OCR A Biology specification coverage** key concepts and skills ('Big ideas')	**Half Term 1 (7)** **Context:** 2.2 – Foundations in Biology – Basic components of living systems 2.3 – Foundations in Biology – Biological molecules 3.7 – Exchange and transport – Exchange surfaces and breathing 3.8 – Exchange and transport – Transport in animals **Key Vocabulary:** Enzymes, plasma membranes, compound light microscope, graticule, transmission electron microscope, confocal, nucleolus, vesicles, lysosomes, cytoskeleton, centrioles, flagella, endoplasmic reticulum, golgi apparatus, prokaryotic, polymer, hydrolysis, triglycerides, phospholipids, sterols, peptides, hydrophilic, hydrophobic, globular, conjugated, fibrous, nucleotides, purines, pyrimidines, transcription, translation, adenosine triphosphate, gaseous, goblet cells, surfactant, spirometer, exoskeleton, spiracles, filaments, collagen, oncotic pressure,	**Half Term 2 (7)** **Context:** 2.3 – Foundations in Biology – Biological molecules 3.8 – Exchange and transport – Transport in animals 3.9 – Exchange and transport – Transport in plants **Key Vocabulary:** polymer, hydrolysis, triglycerides, phospholipids, sterols, peptides, hydrophilic, hydrophobic, globular, conjugated, fibrous, nucleotides, purines, pyrimidines, transcription, translation, adenosine triphosphate, collagen, oncotic pressure, hydrostatic pressure, oxyhaemoglobin, carbaminohaemoglobin, chloride shift, diastole, systole, myogenic, SAN, AVN, vascular, xylem, sieve plates, symplast, apoplast, transpiration, cohesion-tension, assimilates, sucrose, phloem, xerophytes, hydrophytes, **Prior Learning / LTM:** GCSE Biology - microscopy, cell biology, enzymes,	**Half Term 3 (7)** **Context:** 2.4 – Foundations in Biology – Enzymes 2.5 – Foundations in Biology – Plasma membranes 3.9 – Exchange and transport – Transport in plants 4.11 – Biodiversity, evolution and disease – Biodiversity **Key Vocabulary:** Enzymes, denaturation, inhibition, prosthetic, precursor, cofactor, coenzyme, phospholipid bilayer, glycoprotein, glycolipid, extrinsic, cholesterol, solvent, facilitated diffusion, endocytosis, exocytosis, hydrostatic pressure, water potential, vascular, xylem, sieve plates, symplast, apoplast, transpiration, cohesion-tension, assimilates, sucrose, phloem, xerophytes, hydrophytes, biodiversity, opportunistic, stratified, systematic, quadrat, abiotic, biotic, mutation, agriculture, in situ, ex situ, **Prior Learning / LTM:** GCSE Biology - microscopy, cell biology, enzymes,	**Half Term 4 (6)** **Context:** 2.5 – Foundations in Biology – Plasma membranes 2.6 – Foundations in Biology – Cell Division 4.11 – Biodiversity, evolution and disease – Biodiversity **Key Vocabulary:** phospholipid bilayer, glycoprotein, glycolipid, extrinsic, cholesterol, solvent, facilitated diffusion, endocytosis, exocytosis, hydrostatic pressure, water potential, mitosis, interphase, mitotic phase, cytokinesis, prophase, metaphase, anaphase, telophase, meiosis, erythrocytes, neutrophils, totipotent, pluripotent, multipotent, biodiversity, opportunistic, stratified, systematic, quadrat, abiotic, biotic, mutation, agriculture, in situ, ex situ, **Prior Learning / LTM:** GCSE Biology - microscopy, cell biology, enzymes, transport of substances, cell division GCSE Biology – respiratory system, circulatory system, blood and blood vessels,	**Half Term 5 (5)** **Context:** 2.6 – Foundations in Biology – Cell Division 4.12 – Biodiversity, evolution and disease – Communicable diseases 4.10 – Biodiversity, evolution and disease – Classification and evolution **Key Vocabulary:** mitosis, interphase, mitotic phase, cytokinesis, prophase, metaphase, anaphase, telophase, meiosis, erythrocytes, neutrophils, totipotent, pluripotent, multipotent, communicable, pathogen, tuberculosis, meningitis, influenza, zoonosis, transmission, inoculation, fomites, vectors, callose, histamine, phagocytosis, phagosome, phagolysosome, cytokines, opsonins, histocompatibility complex, antibodies, antigens, interleukins, agglutinins, lymphocytes, humoral, autoimmune, pharmacogenetics, pharmacogenomics, kingdom, nomenclature, prokaryotae, protoctista, saprophytic, archaebacterial, phylogeny, homologous,	**Half Term 6 (6)** **Context:** 4.12 – Biodiversity, evolution and disease – Communicable diseases 4.10 – Biodiversity, evolution and disease – Classification and evolution **Key Vocabulary:** communicable, pathogen, tuberculosis, meningitis, influenza, zoonosis, transmission, inoculation, fomites, vectors, callose, histamine, phagocytosis, phagosome, phagolysosome, cytokines, opsonins, histocompatibility complex, antibodies, antigens, interleukins, agglutinins, lymphocytes, humoral, autoimmune, pharmacogenetics, pharmacogenomics, kingdom, nomenclature, prokaryotae, protoctista, saprophytic, archaebacterial, phylogeny, homologous, divergent, alleles, discontinuous, continuous, convergent, analogous, **Prior Learning / LTM:** **Cultural Capital:**

	hydrostatic pressure, oxyhaemoglobin, carbaminohaemoglobin, chloride shift, diastole, systole, myogenic, SAN, AVN, **Prior Learning / LTM:** GCSE Biology - microscopy, cell biology, enzymes, transport of substances, cell division GCSE Biology – respiratory system, circulatory system, blood and blood vessels, plant structure and transport **Cultural Capital:** 2.2 –atomic force microscopy and deep sea molecules, super resolved fluorescence microscopy, cell movement, endosymbiosis 2.3 – biosensors, structure of fibrous proteins, extracting DNA 3.7 – attacking asthma, the first breath, gas exchange cycles in insects, histology 3.8 – collagen, elastin, and aortic aneurysms, a hole in the heart, ECG, measuring blood pressure	transport of substances, cell division GCSE Biology – respiratory system, circulatory system, blood and blood vessels, plant structure and transport **Cultural Capital:** 3.9 – measuring transpiration, the symplast route, aphids and phloem,	transport of substances, cell division GCSE Biology – respiratory system, circulatory system, blood and blood vessels, plant structure and transport GCSE Biology – classification, evolution, adaptations, biodiversity, sampling techniques **Cultural Capital:** 2.4 – enzymes in action, blood clotting mechanism 2.5 – factors affecting transport 4.11 – loss of biodiversity in UK, keystone species, international union for the conservation of nature, countryside stewardship scheme, the rio convention	plant structure and transport GCSE Biology – classification, evolution, adaptations, biodiversity, sampling techniques **Cultural Capital:** 2.6 – cell-cycle regulation and cancer, stem cell ethics, gene therapy using stem cells, plant stem cells and medicines .	divergent, alleles, discontinuous, continuous, convergent, analogous, **Prior Learning / LTM:** GCSE Biology – classification, evolution, adaptations, biodiversity, sampling techniques GCSE Biology – communicable diseases, pathogens, immune system, preventing and treating diseases, **Cultural Capital:** 4.10 – classification system development, interpreting phylogenetic trees, theories of evolution, evolutionary embryology, identical twins variation, classification of giant pandas, anolis lizards 4.12 – the threat of English oak trees, TB cows and badgers, banana diseases and food security, identifying pathogens, influenza case study,	
All material in the Universe is made of very small particles	x	X				
Objects can affect other objects at a distance	x					
Changing the movement of an object requires a net force to be acting on it	x	x				
The total amount of energy in the Universe is always the same	x	x				
Organisms are organised on a cellular basis	x	x	x	x	x	x

Organisms require a supply of energy and materials	x	x	x	x	x	x
Genetic information is passed down from one generation of organisms to another	x	x		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	x
Use different types of scientific enquiry to answer scientific questions.	x	x	x	x	x	x
Use technical terminology with confidence accurately and precisely.	x	x	x	x	x	x
Apply mathematical knowledge to scientific understanding.	x	x	x	x	x	x
Awareness of some of the social and economic implications of science	x	x	x	x	x	x
IMPACT	Assessment: Y12 baseline assessment Unit 2.2 marking point Unit 3.1 marking point **Progression to Post 18:** Foundations for degree study. Mathematical skills. How Science Works 1-8 (HSW code key at bottom of sheet)*	Assessment: Formal assessment 1 Unit 2.3 marking point Unit 3.2 marking point **Progression to KS5:** Foundations for degree study. Mathematical skills. How Science Works 1-8 (HSW code key at bottom of sheet).	Assessment: Formal assessment 2 Unit 2.4 marking point Unit 3.3 marking point **Progression to KS5:** Foundations for degree study. Mathematical skills. How Science Works 1-8 (HSW code key at bottom of sheet).	Assessment: Formal assessment 3 Unit 2.5 marking point Unit 4.2 marking point **Progression to KS5:** Foundations for degree study. Mathematical skills. How Science Works 1-8 (HSW code key at bottom of sheet).	Assessment: Formal assessment 4 Unit 2.6 marking point Unit 4.2 marking point **Progression to KS5:** Foundations for degree study. Mathematical skills. How Science Works 1-8 (HSW code key at bottom of sheet).	Assessment: Unit 4.12-4.13 marking point Unit 4.3 marking point **Progression to KS5:** Foundations for degree study. Mathematical skills. How Science Works 1-8 (HSW code key at bottom of sheet).

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.

*HSW Key for Progression to Post 18 skills:

HSW1	Use theories, models and ideas to develop scientific explanations
HSW2	Use knowledge and understanding to pose scientific questions, define scientific problems, present scientific arguments and scientific ideas
HSW3	Use appropriate methodology, including information and communication technology (ICT), to answer scientific questions and solve scientific problems
HSW4	Carry out experimental and investigative activities, including appropriate risk management, in a range of contexts
HSW5	Analyse and interpret data to provide evidence, recognising correlations and causal relationships
HSW6	Evaluate methodology, evidence and data, and resolve conflicting evidence
HSW7	Know that scientific knowledge and understanding develops over time
HSW8	Communicate information and ideas in appropriate ways using appropriate terminology
HSW9	Consider applications and implications of science and evaluate their associated benefits and risks
HSW10	Consider ethical issues in the treatment of humans, other organisms and the environment
HSW11	Evaluate the role of the scientific community in validating new knowledge and ensuring integrity

HSW12	Evaluate the ways in which society