

Subject Knowledge Audit - Biology

Subject Area:	Science – Biology KS3	Baseline (4 -1)	Dec. (3 -1)	May (3 -1)	Target for 1 year if applicable
Cell biology	<ul style="list-style-type: none"> • cells as the basic structural unit of all organisms; adaptations of cells related to their functions; the main sub-cellular structures of eukaryotic and prokaryotic cells 				
	<ul style="list-style-type: none"> • stem cells in animals and meristems in plants 				
	<ul style="list-style-type: none"> • enzymes 				
	<ul style="list-style-type: none"> • factors affecting the rate of enzymatic reactions 				
	<ul style="list-style-type: none"> • the importance of cellular respiration; the processes of aerobic and anaerobic respiration 				
	<ul style="list-style-type: none"> • carbohydrates, proteins, nucleic acids and lipids as key biological molecules. 				
Transport systems	<ul style="list-style-type: none"> • the need for transport systems in multicellular organisms, including plants 				
	<ul style="list-style-type: none"> • the relationship between the structure and functions of the human circulatory system. 				
Health, disease and the	<ul style="list-style-type: none"> • the relationship between health and disease 				

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development of medicines	• communicable diseases including sexually transmitted infections in humans (including HIV/AIDs)				
	• non-communicable diseases				
	• bacteria, viruses and fungi as pathogens in animals and plants				
	• body defences against pathogens and the role of the immune system against disease				
	• reducing and preventing the spread of infectious diseases in animals and plants				
	• the process of discovery and development of new medicines				
	• the impact of lifestyle factors on the incidence of non-communicable diseases.				
Coordination and control	• principles of nervous coordination and control in humans				
	• the relationship between the structure and function of the human nervous system				

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	<ul style="list-style-type: none"> the relationship between structure and function in a reflex arc 				
	<ul style="list-style-type: none"> principles of hormonal coordination and control in humans 				
	<ul style="list-style-type: none"> hormones in human reproduction, hormonal and non-hormonal methods of contraception 				
	<ul style="list-style-type: none"> homeostasis. 				
Photosynthesis	<ul style="list-style-type: none"> photosynthesis as the key process for food production and therefore biomass for life 				
	<ul style="list-style-type: none"> the process of photosynthesis 				
	<ul style="list-style-type: none"> factors affecting the rate of photosynthesis. 				
Ecosystems	<ul style="list-style-type: none"> levels of organisation within an ecosystem 				
	<ul style="list-style-type: none"> some abiotic and biotic factors which affect communities; the importance of interactions between organisms in a community 				
	<ul style="list-style-type: none"> how materials cycle through abiotic and biotic components of ecosystems 				

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	<ul style="list-style-type: none"> the role of microorganisms (decomposers) in the cycling of materials through an ecosystem 				
	<ul style="list-style-type: none"> organisms are interdependent and are adapted to their environment 				
	<ul style="list-style-type: none"> the importance of biodiversity 				
	<ul style="list-style-type: none"> methods of identifying species and measuring distribution, frequency and abundance of species within a habitat 				
	<ul style="list-style-type: none"> positive and negative human interactions with ecosystems. 				
Evolution, inheritance and variation	<ul style="list-style-type: none"> the genome as the entire genetic material of an organism 				
	<ul style="list-style-type: none"> how the genome, and its interaction with the environment, influence the development of the phenotype of an organism 				
	<ul style="list-style-type: none"> the potential impact of genomics on medicine 				
	<ul style="list-style-type: none"> most phenotypic features being the result of multiple, rather than single, genes 				
	<ul style="list-style-type: none"> single gene inheritance and single gene crosses with 				

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	dominant and recessive phenotypes				
	<ul style="list-style-type: none"> sex determination in humans 				
	<ul style="list-style-type: none"> genetic variation in populations of a species 				
	<ul style="list-style-type: none"> the process of natural selection leading to evolution 				
	<ul style="list-style-type: none"> the evidence for evolution 				
	<ul style="list-style-type: none"> developments in biology affecting classification 				
	<ul style="list-style-type: none"> the importance of selective breeding of plants and animals in agriculture 				
	<ul style="list-style-type: none"> the uses of modern biotechnology including gene technology; some of the practical and ethical considerations of modern biotechnology. 				
Science – Biology KS5					
3.1 Biological Molecules	3.1.1. Monomer and polymers				
	3.1.2 Carbohydrates				
	3.1.3 Lipids				
	3.1.4 Proteins				
	3.1.5 Nucleic acids are important information-carrying molecules				

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	3.1.6 ATP				
	3.1.7 Water				
	3.1.8 Inorganic Ions				
	3.2.1 Cell Structure				
	3.2.2 All cells arise from other cells				
	3.2.3 Transport across cell membranes				
3.2 Cell	3.2.4 Cell recognition and the immune system				
	3.3.1 Surface area to volume ratio				
	3.3.2 Gas exchange				
	3.3.3 Digestion and absorption				
3.3 Organisms exchange substances with their environment	3.3.4 Mass transport				
	3.4.1 DNA, genes and chromosomes				
	3.4.2 DNA and protein synthesis				
	3.4.3 Genetic diversity can arise as a result of mutation or during meiosis				
3.4 Genetic information, variation and relationships between organisms	3.4.4 Genetic diversity and adaptation				

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	3.4.5 Species and taxonomy				
	3.4.6 Biodiversity within a community				
	3.4.7 Investigating diversity				
	3.5.1 Photosynthesis				
	3.5.2 Respiration				
	3.5.3 Energy and ecosystems				
3.5 Energy transfers in and between organisms (A-level only)	3.5.4 Nutrient cycles				
	3.6.1 Stimuli, both internal and external, are detected and lead to a response				
	3.6.2 Nervous coordination				
	3.6.3 Skeletal muscles are stimulated to contract by nerves and act as effectors				
3.6 Organisms respond to changes in their internal and external environments (A-level only)	3.6.4 Homeostasis is the maintenance of a stable internal environment				
	3.7.1 Inheritance				
	3.7.2 Populations				

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	3.7.3 Evolution may lead to speciation				
3.7 Genetics, populations, evolution and ecosystems	3.7.4 Populations in ecosystems				
	3.8.1 Alteration of the sequence of bases in DNA can alter the structure of proteins				
	3.8.2 Gene expression is controlled by a number of features				
	3.8.3 Using genome projects				
3.8 The control of gene expression	3.8.4 Gene technologies allow the study and alteration of gene function allowing a better understanding of organism function and the design of new industrial and medical processes				



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Evidence of subject knowledge development

Record below the things you have **read and researched** to improve your subject knowledge in the boxes below.

Term 1	September/ October	November/ December
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Term 2	January/ February	March/ April
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Term 3	May/ June	June/ July
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Please sign this sheet off at the end of the training year:

Signed: _____ (Trainee) Date: _____

Signed: _____ (Mentor) Date: _____