Biology A-Level Notes Checklist (7401/7402)

Topics	✓
3.1 Biological Molecules (AS)	
3.1.1 Monomers and polymers	
3.1.2 Carbohydrates	
3.1.3 Lipids	
3.1.4 Proteins	
3.1.4.1 General properties of proteins	
3.1.4.2 Many proteins are enzymes	
3.1.5 Nucleic acids are important information-carrying molecules	
3.1.5.1 Structure of DNA and RNA	
3.1.5.2 DNA replication	
3.1.6 ATP	
3.1.7 Water	
3.1.8 Inorganic ions	
3.2 Cells (AS)	
3.2.1 Cell structure	
3.2.1.1 Structure of eukaryotic cells	
3.2.1.2 Structure of prokaryotic cells and of viruses	
3.2.1.3 Methods of studying cells	
3.2.2 All cells arise from other cells	
3.2.3 Transport across cell membranes	
3.2.4 Cell recognition and the immune system	

	✓
3.3 Organisms exchange substances with their environment (AS)	
3.3.1 Surface area to volume ratio	
3.3.2 Gas exchange	
3.3.3 Digestion and absorption	
3.3.4 Mass transport	
3.3.4.1 Mass transport in animals	
3.3.4.2 Mass transport in plants	
3.4 Genetic information, variation and relationships between organisms (AS)	
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	
3.4.4 Genetic diversity and adaptation	
3.4.5 Species and taxonomy	
3.4.6 Biodiversity within a community	
3.4.7 Investigating diversity	
3.5 Energy transfers in and between organisms (A-Level)	
3.5.1 Photosynthesis	
3.5.2 Respiration	
3.5.3 Energy and ecosystems	
3.5.4 Nutrient cycles	

	✓
3.6 Organisms respond to changes in their internal and external environments (A-Level)	
3.6.1 Stimuli, both internal and external, are detected and lead to a response	
3.6.1.1 Survival and response	
3.6.1.2 Receptors	
3.6.1.3 Control of heart rate	
3.6.2 Nervous coordination	
3.6.1.2 Nerve impulses	
3.6.2.2 Synaptic transmission	
3.6.3 Skeletal muscles are stimulated to contract by nerves and act as effectors	
3.6.4 Homeostasis is the maintenance of a stable internal environment	
3.6.4.1 Principles of homeostasis and negative feedback	
3.6.4.2 Control of blood glucose concentration	
3.6.4.3 Control of blood water potential	
3.7 Genetics, populations, evolution and ecosystems (A-Level)	
3.7.1 Inheritance	
3.7.2 Populations	
3.7.3 Evolution may lead to speciation	
3.7.4 Populations in ecosystems	

	✓
3.8 The control of gene expression (A-Level)	
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	
3.8.2.1 Most of a cell's DNA is not translated	
3.8.2.2 Regulation of transcription and translation	
3.8.2.3 Gene expression and cancer	
3.8.3 Using genome projects	
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	
3.8.4.1 Recombinant DNA technology	
3.8.4.2 Difference in DNA between individuals of the same species can be exploited for identification and diagnosis of heritable conditions	
3.8.4.3 Genetic fingerprinting	