Key Stage 5 Subject Timeline Year 12

Subject: Biology **Exam Board: AQA**

	KS5 Biology - Year 12					
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Teach 1 **Teach 2**	**Cell Structure** *Cells (eukaryotes/prokaryotes* *Microscopes* *Cell division and differentiation* *Stem Cells* **Biological Molecules** *Structure/Function of each* *Enzymes and factors controlling reactions*	**Cell Membranes** *Structure/function and transport across* *Diffusion, Osmosis, Active Transport* **Biological Molecules** *DNA and RNA* *DNA Replication* *ATP, Water* *Inorganic Ions*	**Immune System** *Response* *Vaccines and antibodies* *Interpreting Data* *HIV* **Exchange and Transport** *Surface area* *Gas exchange* *Lungs and disease*	**DNA and Protein Synthesis** *Genes/Chromosomes* *Protein Synthesis* *Genetic code* **Exchange and Transport** *Digestion/Absorption* *Haemoglobin* *Heart and Circulation* *Transport in plants* *Xylem and Phloem*	**Diversity and Selection** *Meiosis and variation* *Mutations* *Natural selection* *Effects of selection* **Diversity and Classification** *Classification* *Courtship behaviour* *Gene technologies* *Biodiversity and farming*	Potential to start Yr 13 content. Topic 5 and 6
Key skills and Concepts	**Required practical –** ***Rp1*** *Enzyme controlled reactions (Autumn 1)* ***Rp2*** *Mitosis (Autumn 1)* ***Rp3*** *Osmosis (Autumn 2)* ***Rp4*** *Cell Membranes (Autumn 2)*		**Required Practical –** *Catch up from Autumn Term* *Possible lung/Gill dissection*	**Required Practical –** ***Rp5*** *Heart Dissection (Spring 2)* ***Rp6*** *Microorganisms (Spring 2)*		*PPE Exams*
Threshold Concepts	Fundamental concept – cells are the building blocks of animals and plants – additionally biochemical and genetic processes occur in cells. The structure of them is required to understand these processes well. Practical work is used to experiment on the theory covered.		Role of the immune system and how we combat Pathogens. Properties of exchange surfaces and the role and need for a mass transport system.	The role of DNA is controlling the synthesis of proteins and how mutations occur leading to natural selection and variation. Mass transport continued using the mammalian circulatory system and transport within plants		
End points	*To understand different cell structures and their function* To describe how complex organisms organise their functions based on the role of cell organelles.	*To explain how organisms obtain energy from their food* To describe the importance of microorganisms and how they can be cultivated in a laboratory	*To describe how adaptations of plants help them survive* Describe the factors that affect photosynthesis *Describe how diffusion allows substances to pass in and out of cells*	*To describe different methods of movement of materials* To explain how enzymes work	*To understand the need for organ systems* To consider different methods utilised to move materials	

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	Taking a closer look at the Biochemical structure of common molecules found in cells		*Describe how plants deal with changing water availability*			
Assessments	Assessment – End of Topic Assessments	Assessment - End of Topic Assessments and Yr 12 Progress Test	End of Topic Assessment	End of Topic Assessment	End of Topic Assessment –	**Year 12 PPE Exams**

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	KS5 Biology - Year 13					
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Teach 1	**Photosynthesis** *Light dependent ad Light independent reaction* *Limiting factors* *Photosynthesis experiments*	**Respiration** *Aerobic and Anaerobic respiration* *Respiration experiments*	**Energy transfer and Cycles** *Energy transfer in Ecosystems* *Farming* *Nutrient cycles* *Fertilisers and Eutrophication*	**Mutations and Gene** *Expression* *Mutations* *Cancer* *Stem cells in Medicine* *Regulation of Transcription and Translation* *Epigenetic control*	**Genome Projects** *Using DNA* *Gene Therapy* *Gene Probes* *Genetic Fingerprinting*	**Public Examinations**
Teach 2	**Stimuli and Response** *Survival and response* *Receptors* *Responses in plants* *Control of heart rate*	**Nervous System** *Neurones* *Synapses* *Muscle structure* *Muscle contraction*	**Homeostasis** *Blood Glucose* *Diabetes* *Kidneys* *Controlling water potential* *The Synoptic Essay*	**Genetics** *Genetic Diagrams and crosses* *Linkage* *Epistasis* *Chi Squared and Hardy Weinberg* *Variation and Genetic Drift*	**Populations in Ecosystems** *Ecosystems* *Investigating populations* *Succession* *Conservation* *Data and Evidence*	
Key skills and Concepts	**Rp 7** Chromatography **Rp 9** Photosynthesis	**Rp 8** Respiration **Rp 10** Responding to stimuli **Rp 11** Glucose in Urine			**Rp 12** Sampling	
Threshold Concepts	Biochemical processes Responding to stimuli Pathway of an impulse	Biochemical processes Responding to stimuli and maintaining a constant internal environment. Responding Synoptically to a question			Difficult concepts some of this topic is standalone. To understand the molecular genetics a good understanding of cells is required.	

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End points	*The cycles involved to allow Autotrophs to make their own food.* *The survival responses and why responding to stimuli is important*	*To describe the control of metabolism and understand how conditions and processes in the body are coordinated and controlled*	*Recycling of nutrients and understanding the continuous cycle* *Maintaining a constant internal environment and why this is important*	*To describe our understanding of DNA and the way genes work* To describe how sex cells are produced for use in reproduction	*How our understanding of DNA has lead to technological and medical advances in genetic manipulation* *Sampling Populations*	
Assessments	End of Topic Tests	End of Topic Tests and Yr 13 PPE	End of Topic Tests	**Yr 13 PPE**		Final A Level Examination