



QPHS Year 12 Biology Curriculum Map

Half term	Title	Unit summary	Assessment
1	T1: Biological Molecules	<ul style="list-style-type: none"> Monomer and polymers in biology The structure and function of biological molecules including: polysaccharides, polypeptides and lipids Biochemical tests for each biological molecules 	<ul style="list-style-type: none"> Assessed homework on monomer and polymers. Teacher practical 1: Biochemical tests for each biological molecule. End of topic test on biological molecules.
	T2: Cells	<ul style="list-style-type: none"> The structure of eukaryotic cells, prokaryotic cells and viruses Methods to study cells Transport across cell membranes 	<ul style="list-style-type: none"> Assessed homework on structures of cells and studying cells. Required practical 4: Investigation into the effect of a named variable on the permeability of cell-surface membranes. Teacher practical 2: Drawing cells from prepared slides End of topic test on cells.
2	T1: The Immune System	<ul style="list-style-type: none"> How the immune system identifies and responds to foreign antigens including phagocytosis, the cellular response and the humoral response The structure and replication of HIV Uses of monoclonal antibodies 	<ul style="list-style-type: none"> Assessed homework on the immune system. Assessed homework on HIV and viruses. End of topic test on the immune system with cumulative knowledge from biological molecules and cells.
	T2: Enzymes	<ul style="list-style-type: none"> Models for enzyme action Properties of enzymes related to their tertiary structure. The effects of different factors on the rate of enzyme-controlled reactions. 	<ul style="list-style-type: none"> Assessed homework on enzymes. Required practical 1: Investigation into the effect of a named variable on the rate of an enzyme-controlled reaction. End of topic test on enzymes with cumulative knowledge from cells and biological molecules.
3	T1: Digestion and Absorption	<ul style="list-style-type: none"> The role of digestive enzymes Co-transport mechanisms for the absorption of amino acids and of monosaccharides The role of micelles in the absorption of lipids. 	<ul style="list-style-type: none"> Assessed homework on digestive and absorption. End of topic test on digestion and absorption with cumulative knowledge from enzymes, biological molecules and the immune system.
	T2: DNA, Protein Synthesis and Cell Division	<ul style="list-style-type: none"> DNA, RNA, and ATP structures Genes, chromosomes, DNA replication and protein synthesis. The cell cycle, mitosis and binary fission. 	<ul style="list-style-type: none"> Assessed homework on nucleic acids and DNA replication. Required practical 2: Preparation of stained squashes of cells from plant root tips; use of an optical microscope to identify the stages of mitosis in these stained squashes and calculation of a mitotic index. End of topic test on DNA, protein synthesis and cell division with cumulative knowledge from enzymes.
4	T1: Gas Exchange	<ul style="list-style-type: none"> The relationship between size of an organism or structure and its surface area to volume ratio Gas exchange in single-celled organisms, insects, fish and plants Ventilation and exchange of gases in the lungs 	<ul style="list-style-type: none"> Assessed homework on gas exchange in single-celled organisms, insects, fish and plants. Assessed homework on mixed content from the year. End of topic test on gas exchange with cumulative content from the immune system and digestion and absorption.
	T2: Variation	<ul style="list-style-type: none"> The process of meiosis Causes of genetic diversity including mutations and meiosis The principles of natural selection 	<ul style="list-style-type: none"> Assessed homework on meiosis and the cell cycle. Practical 6: Use of aseptic techniques to investigate the effect of antimicrobial substance on microbial growth. End of topic test on variation with cumulative content from DNA, protein synthesis and cell division.
	T2: Biodiversity and Taxonomy	<ul style="list-style-type: none"> Biodiversity within a community Species and classification systems Investigating diversity within or between species 	<ul style="list-style-type: none"> Assessed homework on taxonomy. Assessed homework on mixed content from the year. End of topic test on biodiversity and taxonomy with cumulative content from enzymes and variation.
5	T1: Mass Transport in Animals	<ul style="list-style-type: none"> The heart; structure, cardiac cycle and blood vessels. The role of haemoglobin in the transport of oxygen Formation of tissue fluid and its return to the circulatory system 	<ul style="list-style-type: none"> Assessed homework on the circulatory system. Assessed homework on mixed content from the year. Required Practical 5: Dissection of animal or plant mass transport system or of an organ within such a system. Teacher Practical 4: Effect of exercise on a named variable. End of topic test on mass transport in animals with cumulative knowledge from a range of year 12 topics.
	T2: Mass Transport in Plants	<ul style="list-style-type: none"> The properties and roles of water and inorganic ions. The cohesion-tension theory of water transport in the xylem vessels. The mass flow hypothesis for the mechanism of translocation in plants. 	<ul style="list-style-type: none"> Assessed homework on water and transpiration. Assessed homework on mixed content from the year. Required practical 3: Production of a dilution series of a solute to produce a calibration curve with which to identify the water potential of plant tissue. Teacher practical 3: Estimating the number of stomata. End of topic test on the mass transport of plants with cumulative knowledge from a range of year 12 topics.
	T2: Statistical analysis	<ul style="list-style-type: none"> Uses and interpretation of stats tests and results 	<ul style="list-style-type: none"> Assessed homework on statistical test and analysing results.
6	Revision and exam skills	Students will recap content from the year and review exam skills.	Year 12 mock exams covering content from the whole year.