YEAR 12 BIOLOGY

MAGHULL HIGH SCHOOL – CURRICULUM MAP

Unit: **Exchange substances** **LESSONS**	1. Surface area to volume ratio 2. Gas exchange	3. Digestion and absorption 4. Mass transport in animals	5. Mass transport in plants
Knowledge & Skills Development	• appreciate the relationship between surface area to volume ratio and metabolic rate. • calculate the surface area to volume ratios of these cells. • Describe the adaptations of gas exchange surfaces; • across the body surface of a single-celled organism • in the tracheal system of an insect (tracheae, tracheoles and spiracles) • across the gills of fish (gill lamellae and filaments including the counter-current principle) • by the leaves of dicotyledonous plants (mesophyll and stomata). • interpret information relating to the effects of lung disease on gas exchange and/or ventilation • interpret data relating to the effects of pollution and smoking on the incidence of lung disease • analyse and interpret data associated with specific risk factors and the incidence of lung disease • evaluate the way in which experimental data led to statutory restrictions on the sources of risk factors • recognise correlations and causal relationships. • Define digestion • Recall the enzymes used for digestion of lipids, carbohydrates and proteins	• Define the function fo haemoglobin • Explain how haemoglobin transports oxygen and the bohr effect • Describe the general pattern of blood circulation in a mammal. Names are required only of the coronary arteries and of the blood vessels entering and leaving the heart, lungs and kidneys. • The structure of arteries, arterioles and veins in relation to their function. • analyse and interpret data relating to pressure and volume changes during the cardiac cycle • analyse and interpret data associated with specific risk factors and the incidence of cardiovascular disease • evaluate conflicting evidence associated with risk factors affecting cardiovascular disease • recognise correlations and causal relationships. • Describe the function of xylem and phloem • recognise correlations and causal relationships • interpret evidence from tracer and ringing experiments and to evaluate the evidence for and against the mass flow hypothesis.	
Assessment / Feedback Opportunities	**Formative Assessment** Teacher questioning Quizzes Exam style questions Essays	**Summative assessment** Topic assessment Exam questions in future end of topic assessments to assess recall	

Key Vocabulary	Independent Variable, Dependent Variable, Control Variables, Method, Conclusion, Precaution, Evaluation, Reliable, Precision, Valid, Anomaly, Describe, Explain, Compare, Analyse, Calculate, Suggest, Absolute, Uncertainty, Error Spiracle, Gill filaments, Tracheae, Tracheoles, Spiracle, Diaphragm, Enzyme, Pancreas, Hydrolysis, Carbohydrases, Lipases, Proteases, Maltase, Sucrase, Lactase, Villi, Capillaries, Veins, Valves, Endothelium, Ultrafiltration, Translocation
Literacy/Reading Opportunities	Subject specific vocabulary introduced before reading of related texts Word etymology from Latin and Greek roots Reading of simple and complex sentences, paragraphs, articles Scientific writing including structuring methods, comparisons and evaluations Synoptic essay writing
Cross Curricular Themes	Numeracy/Maths – averages (means), reading scales, graph plotting, lines of best fit, using and rearranging equations, using scientific calculators, significant figures
Personal Development (Including British Values, RSE, Citizenship)	None
Career Opportunities	Zoologists, ecologists, nanotechnologists