Yr12 Biology – Unit 3.1

MAGHULL HIGH SCHOOL – CURRICULUM MAP

	Sequence		
TOPIC (S) **Biological Molecules**	1. Monomers & Polymers 2. Carbohydrates 3. Lipids	4. Proteins 5. Many proteins are enzymes 6. Structure of DNA and RNA	7. DNA replication 8. ATP 9. Water 10. Inorganic ions
Knowledge & Skills development	• Define monomers, polymers, monosaccharides, condensation reaction and hydrolysis • Describe how mononsaccharides are formed by two condensation reaction of two monosachharides. • Polysaccharides are formed by the condensation of many glucose units. • Recall the biochemical test using Benedict's solution for reducing sugars and non-reducing sugars and iodine/potassium iodide for starch. • Describe how triglycerides are formed by the condensation of one molecule of glycerol and three molecules of fatty acid. • recognise, from diagrams, saturated and unsaturated fatty acids • explain the different properties of triglycerides and phospholipids. • Define and draw the structure of amino acids • Recall how dipeptides and polypeptides are formed • Recall and carry out the biuret test for proteins • Explain the role of hydrogen bonds, ionice bonds and disulphide bonds in the structure of proteins	• appreciate how models of enzyme action have changed over time • appreciate that enzymes catalyse a wide range of intracellular and extracellular reactions that determine structures and functions from cellular to whole-organism level. • Describe the effects of the following factors on the rate of enzyme-controlled reactions – enzyme concentration, substrate concentration, concentration of competitive and of non-competitive inhibitors, pH and temperature. • Describe and label the structure on DNA and RNA. Compare them. • appreciate that the relative simplicity of DNA led many scientists to doubt that it carried the genetic code. • Recall the process of semi-conservative replication of DNA • evaluate the work of scientists in validating the Watson–Crick model of DNA replication. • Describe and label the structure of ATP • Describe and explain how ATP is resynthesised • Recall the several properties of water that make it so important in Biology • recognise the role of ions in the following topics: hydrogen ions and pH; iron ions as a component of haemoglobin; sodium ions in the co-transport of glucose and amino acids; and phosphate ions as components of DNA and of ATP	
Assessment / Feedback Opportunities	Exam questions – teacher assessed	Exam questions – self assessed	Extended writing task – teacher assessed	Deep marking of required practical in lab books	Topic assessment
Cultural Capital	• •				

SMSC / Promoting British Values **(Democracy, Liberty, Rule of Law, Tolerance & Respect)**	• •
Reading opportunities	• Recommended Read: DNA: The Secret of Life
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, Covalent, Ionic, Hydrogen, Monomer, Polymer, Polymerisation, Condensation, Hydrolysis, Monosaccharide, Disaccharide, Triglyceride, Phospholipid, Hydrophilic, Hydrophobic, Double helix
Digital Literacy	The use of excel to plot graphs and analyse data MSOffice35 apps including SharePoint
Cross-Curricular Links	Numeracy/Maths – averages (means), reading scales, graph plotting, lines of best fit, using and rearranging equations, using scientific calculators
Careers	Forensics, anthropology, archaeology, biological scientists, microbiology, biochemistry