

Year 12 Biology Curriculum Plan							
Unit	Core		Hinterland		NC Coverage	Assessment	Whole Education Opportunities
	Knowledge	Skills	Knowledge	Skills			
Section 1: Biological Molecules	1 - Biological Molecules <ul style="list-style-type: none"> 1.1 Introduction to Biological Molecules 1.2 Carbohydrates – monosaccharides 1.3 Carbohydrates – Disaccharides/ Polysaccharides 1.4 Starch, Glycogen, Cellulose 1.5 Lipids 1.6 Proteins 1.7 Enzymes 1.8 Factors Affecting Enzyme Action 1.9 Enzyme Inhibition 	<ul style="list-style-type: none"> Students use, and interpret the results of, qualitative tests for reducing sugars, non-reducing sugars and starch. Students use chromatography, with known standard solutions, to separate a mixture of monosaccharides and identify their components. Students produce a dilution series of glucose solution and use colorimetric techniques to produce a calibration curve with which to identify the concentration of glucose in an unknown solution. Students use, and interpret the results of, the emulsion test for lipids. Students use, and interpret the results of, a biuret test for proteins. Students use chromatography with known standard solutions, to separate a mixture of amino acids and identify their components. Students identify the variables that must be controlled in their investigation into rate of reaction. Students calculate the uncertainty of their measurements of the rate of reaction. Students select an appropriate format for the graphical presentation of the results of their investigation into the rate of enzyme-controlled reactions. Students use a tangent to find the initial rate of an enzyme-controlled reaction. 	<ul style="list-style-type: none"> What is lactose intolerance and why does it make me ill? Investigate what other energy carrying molecules there are in the body other than ATP 	<ul style="list-style-type: none"> Conducting research and collating relevant information. Innovative concept creation and consideration and scrutiny of current practices and methods. 	3.1.1 to 3.1.4	<ul style="list-style-type: none"> PLC/End of topic assessment PR point assessments 	<ul style="list-style-type: none"> SMSC – Should artificial sweetener (aspartame) be banned? You decide.. Career – Oncology dietician Career - gastroenterologist RSHE – Cholesterol. What is it? Is it all bad? (HDL vs LDL)
	2 - Nucleic Acids <ul style="list-style-type: none"> 2.1 Structure of RNA and DNA 2.2 DNA Replication 2.3 Energy and ATP 2.4 Water and Inorganic Ions 	<ul style="list-style-type: none"> Students use, and interpret the results of, a biuret test for proteins. Students use chromatography with known standard solutions, to separate a mixture of amino acids and identify their components. Students identify the variables that must be controlled in their investigation into rate of reaction. Students calculate the uncertainty of their measurements of the rate of reaction. Students select an appropriate format for the graphical presentation of the results of their investigation into the rate of enzyme-controlled reactions. Students use a tangent to find the initial rate of an enzyme-controlled reaction. 	<ul style="list-style-type: none"> How did they map 3 Billion bases in the genome? What is the significance of this? The upside down floating boat – how is this possible? 	<ul style="list-style-type: none"> Conducting research and collating relevant information. Innovative concept creation and consideration and scrutiny of current practices and methods. 	3.1.5 to 3.1.8	<ul style="list-style-type: none"> PLC/End of topic assessment PR point assessments 	<ul style="list-style-type: none"> SMSC – Is it ethical to have a nation DNA database? You decide.. Career - Geneticists Career – Hydrologist RSHE – We can test your DNA to find your true love. ART – How does the double helix structure of DNA compare to other structures on earth with a similar shape
Section 2: Cells	3 – Cell structure <ul style="list-style-type: none"> 3.1 Methods of studying cells 3.2 Electron microscope 3.3 Microscopic measurements 3.4 Eukaryotic cell 3.5 Cell specialisation 3.6 Prokaryotic cells and viruses 3.7 Mitosis 3.8 Cell cycle 	<ul style="list-style-type: none"> Students could use iodine in potassium iodide solution to identify starch grains in plant cells. Calculation of a mitotic index. 	<ul style="list-style-type: none"> Can we use microscopes do view cells at the atomic level? 	<ul style="list-style-type: none"> Conducting research and collating relevant information. Innovative concept creation and consideration and scrutiny of current practices and methods. 	3.2.1 to 3.2.2	<ul style="list-style-type: none"> PLC/End of topic assessment PR point assessments 	<ul style="list-style-type: none"> Hinterland - Maths – using mathematical skills when calculating the magnification of and mitotic index of cells; How can Quantum microscopes change our perception of cells SMSC – Stem cells possibilities – Why do scientists want to use stem cells? What are potential issues related with stem cells research? Career – Microbiologist Career - Pharmacologist
	4 – Transport across membranes	<ul style="list-style-type: none"> Students determine the water potential of plant 			3.2.3		

	<ul style="list-style-type: none"> 8.3 The Structure of RNA 8.4 Protein synthesis – Transcription & Splicing 8.5 Protein Synthesis – Translation <p>Chapter 9: Genetic Diversity</p> <ul style="list-style-type: none"> 9.1 Mutations 9.2 Meiosis and Genetic Variation 9.3 Genetic Diversity and Adaptation 9.4 Types of Selection <p>Chapter 10: Biodiversity</p> <ul style="list-style-type: none"> 10.1 Species and Taxonomy 10.2 Diversity within a Community 10.3 Species Diversity and Human Activity 10.4 Investigating Diversity 10.5 Quantitative Investigations of Variation 	<ul style="list-style-type: none"> Students use a logarithmic scale when dealing with data relating to large numbers of bacteria in a culture. Students given data from which to calculate an index of diversity and interpret the significance of the calculated value of the index. design appropriate methods to ensure random sampling carry out random sampling within a single population use random samples to investigate the effect of position on the growth of leaves. 	<ul style="list-style-type: none"> 4 beneficial evolutionary mutations that are taking place right now. Discover what new species were discovered over the last twelve months 		<p>3.4.3 to 3.4.4</p> <p>3.4.5 to 3.4.7</p>	<ul style="list-style-type: none"> RSHE - DNA damage, repair, and disease SMSC – Are humans exerting selection pressure unfairly on other organisms. SMSC – Lets take this gene out, its inferior. The arguments in genetic screening. Career – Genomics (Cancer Biology) Career – Genomics (antibacterial resistance) RSHE – Top 5 most unusual mating rituals. Why is it so significant? SMSC – The battle for the soul of biodiversity. Career - Taxonomist Career - Taxidermy RSHE – What does Biodiversity mean to health?
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