

Long Term Plan: Applied Human Biology Year 12 (Teacher One)



Half term	Unit title	Key knowledge/ Content to learn and retain	Essential skills to acquire (subject & generic)	Link to subject ethos and driver (rename)	Anticipated misconceptions	Links to previous KS	Opportunity for stretch for high prior attainers	SMSC & British Values	Cultural Capital	Career Link
One	Fundamentals of Human Biology	<p>Organelles found in human cells - their structure and function</p> <p>Transport across the cell membrane, including osmosis, diffusion, active transport and endo/exocytosis</p> <p>Structure and function of key biological molecules</p> <p>Respiration - including an overview of</p>	<p>Extended writing - including writing full lab reports with references and citations</p> <p>Drawing and labelling scientific diagrams</p> <p>Interpreting data presented in tabular and graphical format</p>		<p>The steps of glycolysis are complex and will need plenty of practice</p> <p>Confusion between simple and facilitated confusion. Some students also confuse the latter and active transport</p> <p>Comparison of structures of Alpha and Beta Glucose</p>	<p>This unit builds on the anatomy and physiology that students have studied at KS4. Students will extend their knowledge of each organ system and expand their knowledge to include pathology</p>	<p>More complex study of respiration</p> <p>Linking of structure to chemical properties and function in biological molecules</p>	<p>Safe working in a lab, and respecting each other's working space.</p> <p>Ethical issues surrounding the use of biological samples, including the use of live samples.</p> <p>Risk factors for non-communicable disease</p>	<p>The ubiquity of biology allows for examples to be taught in a wide variety of familiar and unfamiliar contexts</p>	<p>An A-level in biology opens to doors to a wide range of STEM field careers.</p> <p>The topics covered in this unit would build the foundations for students to study a range of biomedical and healthcare courses or to enter these fields through employment</p>

		<p>glycolysis, krebs cycle and oxidative phosphorylation</p> <p>The nervous system, including action potentials, synapses and reflexes</p> <p>Structure and function of circulatory, and respiratory</p> <p>Study of the circulatory system must include control of heart rate, blood pressure and the role of lymphatic system</p> <p>Common pathologies of the above systems.</p>								
Two	Controlling the Internal Environment	The unitary and digestive systems, including common pathologies.	Extended writing - including writing full lab reports with references and citations		Confusion between simple and facilitated confusion. Some students also confuse the latter and active	This unit builds on the anatomy and physiology that students have studied at KS4. Students will extend their	Interpretation of more complex diagnostics	Safe working in a lab, and respecting each other's working space. Ethical issues	The ubiquity of biology allows for examples to be taught in a wide variety of familiar and unfamiliar	An A-level in biology opens to doors to a wide range of STEM field careers.

		<p>Control of water potential in the body</p> <p>BMI and nutritional disorders, including the impact of obesity on the body</p> <p>Control of blood sugar and diabetes</p> <p>Cellular and Tissue response to injury.</p> <p>The process of wound healing</p> <p>Ischemia, necrosis and apoptosis</p> <p>Interpretation of common diagnostics, including ECGs and vital signs - study of vital signs should include how these can be recorded from a patient.</p>	<p>Drawing and labelling scientific diagrams</p> <p>Interpreting data presented in tabular and graphical format</p>		<p>transport</p> <p>Confusion between type one and type two diabetes</p> <p>The overlapping but separate processes of necrosis and apoptosis</p>	<p>knowledge of each organ system and expand their knowledge to include pathology</p>		<p>surrounding the use of biological samples, including the use of live samples.</p> <p>Risk factors for non-communicable disease</p>	<p>contexts</p>	<p>The topics covered in this unit would build the foundations for students to study a range of biomedical and healthcare courses or to enter these fields through employment</p>
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Three	Immunity	<p>Innate, Specific and Passive immunity - including detail on the roles and types of white blood cells</p> <p>Autoimmune disorders, with a focus on: type I diabetes, MS, crohn's disease and arthritis</p> <p>Immunosuppression, including HIV/AIDS, SCID and medically induced Immunosuppression</p> <p>The mechanism of allergies</p>	<p>Extended writing - including writing full lab reports with references and citations</p> <p>Drawing and labelling scientific diagrams</p> <p>Interpreting data presented in tabular and graphical format</p>		<p>Confusion between the many types of white blood cell</p> <p>The difference between HIV and AIDS</p>	<p>This unit builds on study of immunity at GCSE. Students should already be familiar with the role of white blood cells and the purpose of antibodies.</p>	<p>Comparison of the structures and function of different white blood cells</p>	<p>Safe working in a lab, and respecting each other's working space.</p> <p>Ethical issues surrounding the use of biological samples, including the use of live samples.</p> <p>The importance of public hygiene</p>	<p>The ubiquity of biology allows for examples to be taught in a wide variety of familiar and unfamiliar contexts</p> <p>The impact of the AIDS pandemic could be touched upon</p>	<p>An A-level in biology opens to doors to a wide range of STEM field careers.</p> <p>The topics covered in this unit would build the foundations for students to study a range of biomedical and healthcare courses or to enter these fields through employment</p>
Four	Human Genetics	<p>Protein synthesis</p> <p>Cause and impact of mutations</p> <p>Mendelian and sex linked inheritance, including drawing and interpreting</p>	<p>Extended writing - including writing full lab reports with references and citations</p> <p>Drawing and labelling scientific diagrams</p>		<p>The difference between oncogenes and tumor suppressor genes</p> <p>Interpreting pedigree diagrams can be difficult for some students so will need</p>	<p>This unit builds on GCSE study of genetics; and students should already have a base knowledge of mendelian genetics with which to enter this unit.</p>	<p>Calculation of more complex genetic crosses and interpretation of multigenerational pedigree charts.</p>	<p>Safe working in a lab, and respecting each other's working space.</p> <p>Ethical issues surrounding the use of biological samples, including the use of live samples.</p>	<p>The ubiquity of biology allows for examples to be taught in a wide variety of familiar and unfamiliar contexts</p>	<p>An A-level in biology opens to doors to a wide range of STEM field careers.</p> <p>The topics covered in this unit would build the foundations for students to study a range of</p>

		<p>punnet squares</p> <p>Genetic disorders, including CF, Huntingtons, Downs and Hemophilia</p> <p>Types of Tumors and Tumor Growth The role of oncogenes and tumor suppressor genes</p> <p>Genetic testing, and interpretation of pedigree diagrams</p>	<p>Interpreting data presented in tabular and graphical format</p>		<p>careful teaching</p>			<p>The ethics of genetic testing</p>		<p>biomedical and healthcare courses or to enter these fields through employment</p>
Five	Revision and preparation for Unit One Exam									
Six	Haematology	<p>Structure and function of blood components</p> <p>Blood Grouping</p> <p>The cause, symptoms, biological effects,</p>	<p>Level three technical and practical skills, including use of advanced glassware to carry out synthesis and purification</p> <p>Accurate</p>		<p>The intercompatibility of different blood types</p> <p>Confusion between different types of anemia</p>	<p>This unit builds directly on from work done earlier in the year, combining knowledge from across the course so far to focus on blood pathology</p>	<p>Comparison and evaluation of different haematological tests</p>	<p>Safe working in a lab, and respecting each other's working space.</p> <p>Ethical issues surrounding the use of biological samples, including the</p>	<p>The ubiquity of biology allows for examples to be taught in a wide variety of familiar and unfamiliar contexts</p>	<p>A Level Three Qualification in biology opens to doors to a wide range of STEM field careers.</p> <p>The topics covered in this unit would build</p>

		<p>diagnosis and treatment of: Leukemia Hepatitis Anemia (Iron deficiency and sickle cell) HIV Haemophilia</p> <p>The role, use and methodology of: Haemocytometers Full Blood Smears Blood Group analysis Iron deficiency testing Clotting Time</p>	<p>measurement of substances using a variety of equipment including titration</p> <p>Safe handling of corrosive and toxic chemicals</p> <p>Presenting and interpreting data in graphical and tabular form</p> <p>Extended writing, including producing formal lab write ups with references and citations</p> <p>Following written methods</p> <p>Mathematical skills, including changing the subject of an equation, multi step problem solving, percentages,</p>					<p>use of live samples.</p> <p>Risk factors for non-communicable disease</p>		<p>the foundations for students to study a range of biomedical and healthcare courses or to enter these fields through employment</p>
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			graph drawing, drawing tangents to a curve, ratios, using standard form, fractions and working with powers.							
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