Long Term Plan: Biology Year 13 (Teacher Two)

ARCHBISHOP SENTAMU ACADEMY
CHURCH OF ENGLAND

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	Energy Transfers	Light dependant and light independent reactions of photosynthesis Leaf pigment chromatography The biochemistry of respiration, including detail of glycolysis, the Krebs Cycle and oxidative phosphorylation	Level three technical and practical skills, including use of advanced glassware to carry out a wide range of investigations. Accurate measurement of substances using a variety of equipment. Safe handling of corrosive and toxic chemicals, including		The various stages, substrates and enzymes of photosynthesis and respiration are very easy to confuse and so will need lots of explicit practice and over teaching	Students will have a very general overview of the starting materials and end products of photosynthesis and respiration; however the vast majority of this unit will be brand new to them.	Control points of respiration - why are they there and what makes them points at which the rate can be controlled?	Safe working in a lab, and respecting each other's working space. Ethical issues surrounding the use of biological samples, including the use of live samples.	The ubiquity of biology allows for examples to be taught in a wide variety of familiar and unfamiliar contexts	An A-level in biology opens to doors to a wide range of STEM field careers. 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

			cellular stains Presenting and interpreting data in graphical and tabular form Extended writing, including producing formal lab write ups with references and citations Following written methods							
Two	Energy Transfers	Biomass GPP and NPP Food chains and webs - including the importance of simplifying human food chains Nitrogen and phosphorus cycles Minerals in plant growth	Level three technical and practical skills, including use of advanced glassware to carry out a wide range of investigations. Accurate measurement of substances using a variety of equipment. Safe handling		Confusion between the nitrogen and phosphorus cycles	This unit follows on directly from work students have previously done on the carbon and water cycles - extending it to look at two other examples of biological cycles.	Combining cycles and carrying out quantitative analysis	Safe working in a lab, and respecting each other's working space. Ethical issues surrounding the use of biological samples, including the use of live samples.	The ubiquity of biology allows for examples to be taught in a wide variety of familiar and unfamiliar contexts	An A-level in biology opens to doors to a wide range of STEM field careers. The topics covered in this unit would build the foundations for students to study a range of conservation or ecology courses or to enter these fields through

			of corrosive and toxic chemicals, including cellular stains Presenting and interpreting data in graphical and tabular form Extended writing, including producing formal lab write ups with references and citations Following written methods							employment
Three	Control of Gene Expression	Cause and impact of genetic mutations The use of Stem Cells Tissue culture, including practical investigation Transcription	Level three technical and practical skills, including use of advanced glassware to carry out a wide range of investigations. Practical Microscopy and drawing of scientific		Confusion between the heritability of genetic and epigenetic information	This unit follows directly on the end of Y12 work on genetics, with much of the content being new to students.	Comparing methods of tissue culture	Safe working in a lab, and respecting each other's working space. Ethical issues surrounding the use of biological samples, including the use of live samples.	The ubiquity of biology allows for examples to be taught in a wide variety of familiar and unfamiliar contexts	An A-level in biology opens to doors to a wide range of STEM field careers. The topics covered in this unit would build the foundations for students to study a range of biomedical and

		factors and epigenetics	diagrams Accurate measurement of substances using a variety of equipment. Safe handling of corrosive and toxic chemicals, including cellular stains Presenting and interpreting data in graphical and tabular form Extended writing, including producing formal lab write ups with references and citations Following written methods							healthcare courses or to enter these fields through employment
Four	Control of Gene Expression	Tumors DNA Sequencing	Level three technical and practical skills, including use		Confusion between the methodology and application	This unit follows directly on the end of Y12 work on	Comparing genetic technologies	Safe working in a lab, and respecting each other's working	The ubiquity of biology allows for examples to be taught in a	An A-level in biology opens to doors to a wide range of

		technology PCR and Gel electrophoresis DNA fingerprinting and diagnosis of genetic disorders	of advanced glassware to carry out a wide range of investigations. Practical Microscopy and drawing of scientific diagrams Accurate measurement of substances using a variety of equipment. Safe handling of corrosive and toxic chemicals, including cellular stains Presenting and interpreting data in graphical and tabular form Extended writing, including producing formal lab write ups with references and		of the different genetic technologies studied.	genetics, with much of the content being new to students.		space. Ethical issues surrounding the use of biological samples, including the use of live samples.	wide variety of familiar and unfamiliar contexts	STEM field careers. 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

			citations Following written methods							
Five	Revision and preparation for -Level exams									
Six	Revision and preparation for A-Level exams									