

Long Term Plan: Biology Year 13 (Teacher One)

“Science is simply the word we use to describe a method of organising our curiosity.”

Half term	Unit title	Key knowledge/ Content to learn and retain	Essential skills to acquire (subject & generic)	Anticipated misconceptions	Links to previous KS	Opportunity for stretch for high prior attainers
One	Response	<p>Types of response, including practical investigation of plants and animals</p> <p>The nervous system, including action potential transmission and synapses</p> <p>The Eye as an example of a receptor</p> <p>Control of Heart Rate</p>	<p>Level three technical and practical skills, including use of advanced glassware to carry out a wide range of investigations.</p> <p>Practical Microscopy and drawing of scientific diagrams</p> <p>Accurate measurement of substances using a variety of equipment.</p> <p>Safe handling of corrosive and toxic chemicals, including cellular stains</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>Confusion between charges and direction of ion movement during an action potential.</p>	<p>This unit builds on from work done on homeostasis at KS4. Students should already have an understanding of the structure of the nervous system and its role in maintaining body conditions.</p>	<p>Quantitative analysis of an action potential</p>
SMSC &	Safe working in a lab, and respecting each other's working space.					

British Values	Ethical issues surrounding the use of biological samples, including the use of live samples.					
Cultural Capital	The ubiquity of biology allows for examples to be taught in a wide variety of familiar and unfamiliar contexts					
Career Link	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 employment					
Two	Response	<p>Homeostasis The control of blood sugar and water potential</p> <p>The second messenger model</p> <p>Diabetes</p>	<p>Level three technical and practical skills, including use of advanced glassware to carry out a wide range of investigations.</p> <p>Practical Microscopy and drawing of scientific diagrams</p> <p>Accurate measurement of substances using a variety of equipment.</p> <p>Safe handling of corrosive and toxic chemicals, including cellular stains</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>Confusion between positive and negative feedback loops</p> <p>Confusion between types of diabetes</p>	<p>Students will have previously studied the control of blood sugar as an overview and this section of the unit will look at this in more detail before extending by looking at control of water potential as a second example of negative feedback</p>	<p>Quantitative analysis of feedback loops.</p>

Three	Genetics, Variation and Evolution (This topic spans across 2 half terms)	Gene linkage and epistasis Chi Squared and Hardy-Weinberg Principle. Practical investigation of allele distribution	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 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 Mathematical skills, including changing the subject of an equation, multi step problem solving, percentages, graph drawing, drawing tangents to a curve, ratios, using standard form, fractions and working with powers.	Changing the subject of an equation and converting units Confusion between dominant and co-dominant, especially when combined with epistatic mechanisms	Although this unit follows on from where Y12 study of genetics left off, most of the content covered will be new to students, though they will already be familiar with simple genetics terminology such as allele, dominant and heterozygous	Multi-step genetics calculations
SMSC & British Values	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.					
Cultural Capital	The ubiquity of biology allows for examples to be taught in a wide variety of familiar and unfamiliar contexts					
Career Link	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 employment					
Four	Genetics, Variation and Evolution (This topic	Speciation Ecological succession	Level three technical and practical skills, including use of advanced glassware to carry out a wide range of investigations.	Definition of a species. Use and application of different sampling techniques.	This unit follows directly on from student's previous study of ecology at the	At what point does speciation occur?

	spans across 2 half terms)	Sampling techniques and practical investigation of species distribution	<p>Accurate measurement of substances using a variety of equipment.</p> <p>Safe handling of corrosive and toxic chemicals, including cellular stains</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>		end of Y12	
SMSC & British Values	<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>					
Cultural Capital	The ubiquity of biology allows for examples to be taught in a wide variety of familiar and unfamiliar contexts					
Career Link	<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 conservation or ecology courses or to enter these fields through employment</p>					
Five	<p>Revision and preparation for A-Level exams</p> <p>Revisit to subject knowledge from across the course & use of PLC to ensure that students have a good grasp of all aspects of the specification</p> <p>Use of retrieval quizzes and activities to identify gaps in SK and misconceptions</p> <p>Support students in developing summary notes, flash cards etc to aid retrieval of key facts</p> <p>Ensure that students have the necessary skills for effective revision</p> <p>Review the wider reading that students have been doing to support their preparation for the essay question.</p> <p>CPAC</p> <p>Ensure that CPAC evidence is in place for all students for all required practical work</p>					
Six	<p>Revision and preparation for A-Level exams</p> <p>Focus on past exam questions and papers – command words and application of knowledge</p> <p>Practice the application of knowledge that draws upon the practical aspects of the course</p> <p>Specific focus on the essay question for paper 3</p> <p>Timed completion of questions to support with pace through the exam paper</p> <p>SLOP style activities to ensure that all are prepared for the aspects of maths that will be present on the exam papers</p>					

