Curriculum Map Year 13 Biology

Topic Name	**Term**	**Skills** developed with link to NC Subject content	Reflection on previous link in the curriculum	Progress to future link in the curriculum
3.5 Energy and ecosystems, Nutrient cycles 3.7 Inheritance Teacher 1	*Autumn HT1*	**Understanding of:** ● Biomass production by plants and how to measure biomass using a calorimeter. Calculation of GPP and NPP (NPP=GPP-R). ● Calculation of Net Production in consumers (N=I-(F+R)). ● Food webs and calculation of efficiency of energy transfer. ● Farming practices to simplify food webs to reduce energy loss. ● Nitrogen cycle and Phosphorous cycle. ● Fertilisers and eutrophication. ● Genetic diagrams and inheritance. ● Codominance, linkage and epistasis. ● Chi-squared test and its use.	GCSE- Food chains and nutrient cycles. ● Ecosystems, biotic and abiotic factors ● Food chains, webs and feeding relationships ● Biomass and pyramids ● The carbon cycle ● Decay	Yr13: Links to essay skills later in the course. Control of gene expression.
3.6 Muscles and homeostasis Teacher 2	*Autumn HT1*	**Understanding of:** ● Muscle structure and function. ● Sliding filament theory ● Slow and fast twitch fibre, phosphocreatine. ● Negative and positive feedback in homeostasis. ● Blood glucose homeostasis, role of insulin, glucagon and adrenaline. ● Diabetes and use of colorimetry to test glucose levels. ● Kidney structure and function ● Water homeostasis.	GCSE- Specialised cells, homeostasis, kidneys and diabetes. ● Cell specialisation and differentiation. ● Endocrine system and hormones ● Negative feedback ● Glucose homeostasis ● Temperature homeostasis ● Water homeostasis ● Kidney dialysis and transplants.	Yr13: Links to essay skills later in the course.
3.7 Populations, Evolution and Speciation Mock preparation Teacher 1	*Autumn HT2*	**Understanding of:** ● Hardy-Weinberg principle and it's use. ● Types of variation and frequency patterns in populations due to different types of selection processes. ● Mechanisms of allopatric and sympatric speciation. ● Genetic drift. **Development of:** ● Exam technique for year 1 content, particularly for longer answer questions.	GCSE- Genetics. ● Asexual and sexual reproduction ● Meiosis ● Gregor Mendel and genetic terminology ● Inheritance and genetic diseases ● Adaptation and variation ● Evolutionary trees ● Speciation	Yr13: Links to essay skills later in the course.
3.8 Gene expression, regulation of transcription and translation, cancer Mock preparation Teacher 2	*Autumn HT2*	**Understanding of:** ● Different types of mutations and their impact. ● Mutagenic agents and cancer. ● Stem cells and differential gene expression. ● Role of transcription factors and factors such as oestrogen and RNAi that can influence them. ● Epigenetic control of gene expression, such as methylation and acetylation. **Development of:** ● Exam technique for year 1 content, particularly for longer answer questions.	GCSE - genetics topic. ● Family trees and ethics ● Inheritance of gender ● Adaptation and variation ● Darwin vs. Wallace Year 1 content - DNA, transcription and translation. ● DNA structure and the role of genes and chromosomes ● Protein synthesis using mRNA ● Mutations and their effect on protein structure.	Yr13: Links to essay skills later in the course.

3.7 Populations in ecosystems Essay writing Teacher 1	*Spring HT3*	**Understanding of:** ● Ecosystems and their organisation. ● Abiotic and biotic factors affect population size in an ecosystem. ● Predator - prey relationships, inter- and intra-specific competition. ● Investigating populations, sampling methods. ● Succession **Development of:** ● Essay writing skills, with multiple essays being completed in each of the main areas studied so far.	GCSE- Ecology topic and human impact on the environment. ● Ecosystems, biotic and abiotic factors ● Food chains, webs and feeding relationships ● Biomass and pyramids	
3.8 Genome projects and recombinant DNA technology Teacher 2	*Spring HT3*	**Understanding of:** ● Sequencing projects such as the human genome project and its role in understanding genetics. Understanding the proteome. ● Techniques to make DNA fragments, such as reverse transcriptase, restriction endonucleases and gene machines. ● Amplifying DNA fragments using PCR. ● Recombinant DNA technology, gene therapy, gene probes and their uses. ● Genetic fingerprinting.	Year 1 content - DNA, transcription and translation. ● DNA structure and the role of genes and chromosomes ● Protein synthesis using mRNA ● Mutations and their effect on protein structure. GCSE - DNA structure. ● DNA structure and the role of genes and chromosomes ● The human genome project ● Protein synthesis using mRNA ● Mutations and their effect on protein structure	
Revision Teacher 1	*Spring HT4*	Recap and reflection on content learnt during year 12 & 13 Catch up on any missed required practicals, etc. Exam question focus Scientific skills focus		
Revision Teacher 2	*Spring HT4*	Recap and reflection on content learnt during year 12 & 13 Catch up on any missed required practicals, etc. Exam question focus Scientific skills focus		