Yr12 Biology – Unit 3.4

MAGHULL HIGH SCHOOL – CURRICULUM MAP

	Sequence		
TOPIC (S) **Genetic information, variation & relationships between organisms**	1. DNA, genes and chromosomes 2. DNA and protein synthesis	3. Genetic dirveristy can arise as a results of mutation 4. Genetic diversity and adaptation	5. Species and taxonomy 6. Biodiversity within a community 7. Investigating diversity
Knowledge & Skills development	• Describe the structure of molecules such as tRNA and mRNA • Describe and explain the stages in transcription, including any enzymes involved. • Describe and explain the stages in translation, including any enzymes involved. • Relate the base sequence of nucleic acids to the amino acid • sequence of polypeptides, when provided with suitable data about the genetic code • Interpret data from experimental work investigating the role of nucleic acids. • Recall domain, kingdom, phylum, class,order, family, genus and species. • Identify binomial names of species given • appreciate that advances in immunology and genome sequencing help to clarify evolutionary relationships between organisms. • Define biodiversity and species richness • Calculate and index of diversity using the equation given • Describe and explain how diversity withint a species can be investigated • Interpret data relating to similarities and differences in the base sequences of DNA and in the amino acid sequences of proteins to suggest relationships between different organisms within a species and between species	• Define mutation • Describe deletion and substitution mutations • Recall the stages in meiosis • Complete diagrams showing the chromosome content of cells after the first and second meiotic division, when given the chromosome content of the parent cell • Explain the different outcome of mitosis and meiosis • Recognise where meiosis occurs when given information about an unfamiliar life cycle • Explain how random fertilisation of haploid gametes further Increases genetic variation within a species. • Describe natural selection and directional selection • Use unfamiliar information to explain how selection produces changes within a population of a species • Interpret data relating to the effect of selection in producing change within populations • Show understanding that adaptation and selection are major factors In evolution and contribute to the diversity of living organisms.	

	• appreciate that gene technology has caused a change in the methods of investigating genetic diversity; inferring DNA differences from measurable or observable characteristics has been replaced by direct investigation of DNA sequences.				
Assessment / Feedback Opportunities	Exam questions – teacher assessed	Exam questions – self assessed	Extended writing task – teacher assessed	Deep marking of required practical in lab books	Topic assessment
Cultural Capital	• •				
SMSC / Promoting British Values **(Democracy, Liberty, Rule of Law, Tolerance & Respect)**	• Farming techniques reduce biodiversity. The balance between conservation and farming. •				
Reading opportunities	• Recommended Read: Ernst Mayr: This Is Biology: The Science of the Living World				
Key Vocabulary	Independent Variable, Dependent Variable, Control Variables, Method, Conclusion, Precaution, Evaluation, Reliable, Precision, Valid, Anomaly, Describe, Explain, Compare, Analyse, Calculate, Suggest, Absolute, Uncertainty, Error, Degenerate, Universal, Transcription, Intron, Exon, Splicing, Translation, Genetic Diversity, Directional selection, Stabilising selection, Biodiversity, Hierarchy, Taxonomy, Population, Conservation				
Digital Literacy	The use of excel to plot graphs and analyse data MSOffice35 apps including SharePoint				
Cross-Curricular Links	Numeracy/Maths – averages (means), reading scales, graph plotting, lines of best fit, using and rearranging equations, using scientific calculators				
Careers	Geneticist, ecology, wildlife conservationist, marine biology, zoo keeper, education officer at a zoo				