

# Curriculum Map Year 11 Trilogy Science - 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
DNA, genes and meiosis  Inheritance and genetics	Autumn HT1	<b>Understanding of:</b> <ul style="list-style-type: none"> <li>DNA structure and the role of genes and chromosomes</li> <li>Protein synthesis overview</li> <li>Mutations and their effect on protein structure</li> <li>Asexual adn sexual reproduction</li> <li>Meiosis</li> <li>Gregor Mendel and genetic terminology</li> <li>Inheritance and genetic diseases</li> </ul>	Year 6: Evolution and inheritance <ul style="list-style-type: none"> <li>Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</li> <li>Recognise that living things produce offspring of the same kind but normally offspring vary and are not identical to their parents</li> </ul>	Year 12: Biological molecules <ul style="list-style-type: none"> <li>Structure of DNA and RNA, including DNA replication</li> </ul> Year 12: Variation and relationships <ul style="list-style-type: none"> <li>Comparing DNA in nucleus, chloroplasts and mitochondria.</li> <li>Genetic code, triplet codons, introns and exons.</li> <li>Genetic code universality and degenerate nature.</li> <li>Role of DNA and mRNA in protein synthesis.</li> <li>Types of mutations and their effect on genetic code.</li> </ul> Year 12: Mitosis and meiosis <ul style="list-style-type: none"> <li>Stages of mitosis and meiosis.</li> </ul> Year 13: Inheritance <ul style="list-style-type: none"> <li>Genetic diagrams and inheritance.</li> <li>Codominance, linkage and epistasis.</li> <li>Chi-squared test and its use.</li> </ul> Year 13: Mutations and control of gene expression <ul style="list-style-type: none"> <li>Different types of mutations and their impact.</li> <li>Mutagenic agents and cancer.</li> </ul>
Inheritance and genetics  Variation and evolution  Mock exam preparation (if mocks at this time)	Autumn HT2	<b>Understanding of:</b> <ul style="list-style-type: none"> <li>Family trees and ethics</li> <li>Inheritance of gender</li> <li>Adaptation and variation</li> <li>Darwin vs. Wallace</li> <li>Fossil evidence of evolution</li> <li>Evolutionary trees</li> <li>Selective breeding</li> <li>Brief recap and review of content, particularly paper 1 content.</li> </ul>	Year 6: Evolution and inheritance <ul style="list-style-type: none"> <li>Recognise that living things have changed over time and that fossils provide information about things that lived millions of years ago.</li> <li>Recognise that living things produce offspring of the same kind but normally offspring vary and are not identical to their parents</li> </ul> Year 4: Classification <ul style="list-style-type: none"> <li>Recognise that living things can be grouped in various ways; explore/use classification keys to help group, identify,</li> </ul>	Year 13: Inheritance <ul style="list-style-type: none"> <li>Genetic diagrams and inheritance.</li> <li>Codominance, linkage and epistasis.</li> </ul> Year 13: Evolution and speciation <ul style="list-style-type: none"> <li>Types of variation and frequency patterns in populations due to different types of selection processes.</li> <li>Mechanisms of allopatric and sympatric speciation.</li> <li>Genetic drift.</li> </ul>

			<ul style="list-style-type: none"> <li>name various living things in the local/wider environment;</li> <li>recognise that environments can change and that this can sometimes pose dangers to living things</li> </ul> <p>Year 6: Classification</p> <ul style="list-style-type: none"> <li>Describe how living things are classified into broad groups according to common observable characteristics &amp; based on similarities/differences, incl. micro-organisms, plants &amp; animals;</li> <li>give reasons for classifying plants/animals based on specifics</li> </ul>	
<b>Variation and evolution</b>  <b>Ecology in action</b>	Spring HT3	<b>Understanding of:</b> <ul style="list-style-type: none"> <li>Genetic engineering</li> <li>GM crops</li> <li>Extinction</li> <li>Ecosystems, biotic and abiotic factors</li> <li>Food chains, webs and feeding relationships</li> <li>Biomass and pyramids</li> <li>The carbon cycle</li> <li>Land use</li> </ul>	<p>Year 2: Food chains and feeding relationships</p> <ul style="list-style-type: none"> <li>Describe how animals obtain their food from plants/other animals using the idea of a simple food chain.</li> <li>Identify/name different sources of food</li> </ul>	<p>Year 13: Ecosystems</p> <ul style="list-style-type: none"> <li>Ecosystems and their organisation.</li> <li>Abiotic and biotic factors affect population size in an ecosystem.</li> <li>Predator - prey relationships, inter- and intra-specific competition.</li> <li>Investigating populations, sampling methods.</li> </ul> <p>Year 13: Gene technology</p> <ul style="list-style-type: none"> <li>Sequencing projects such as the human genome project and its role in understanding genetics. Understanding the proteome.</li> <li>Techniques to make DNA fragments, such as reverse transcriptase, restriction endonucleases and gene machines.</li> <li>Amplifying DNA fragments using PCR.</li> <li>Recombinant DNA technology, gene therapy, gene probes and their uses.</li> <li>Genetic fingerprinting.</li> </ul>
<b>Ecology in action</b>	Spring HT4	<b>Understanding of:</b> <ul style="list-style-type: none"> <li>Deforestation and peat bogs</li> <li>Pollution and global warming</li> <li>Waste management</li> <li>Monitoring pollution</li> <li>Maintaining biodiversity</li> <li>Maintaining food security</li> <li>Using biotechnology</li> </ul>		<p>Year 13: Ecology and ecosystems.</p> <ul style="list-style-type: none"> <li>Ecosystems and their organisation.</li> <li>Abiotic and biotic factors affect population size in an ecosystem.</li> <li>Predator - prey relationships, inter- and intra-specific competition.</li> <li>Investigating populations, sampling methods.</li> </ul>
<b>Reflection and preparation for examinations</b>	Summer HT5	Recap and reflection on content learnt during year 10 & 11 Exam question focus Application question focus Mathematical skills focus Scientific skills focus	Y10 and Y11 content	

Examination Period	Summer HT6			