



## Biology Curriculum Overview - Year 12 - Teacher A

		Unit	Details
Autumn One	<b>Biological Molecules</b>		<p>This topic covers four main types of biological molecules: carbohydrates, lipids, proteins, and nucleic acids. Pupils will delve into the structure and function of these molecules, exploring how their unique arrangements enable them to carry out their specific roles. They will learn about the monomers that make up these molecules and how they form polymers through dehydration synthesis and break down through hydrolysis. The topic also covers the importance of water as a solvent and its properties that allow it to participate in various biological processes.</p>
Autumn Two			
Spring One	<b>Genetic information</b>		<p>In this topic, pupils will delve into the structure and function of DNA, the molecule that carries genetic information. They will learn about the double helix structure of DNA and the complementary base pairing that allows for accurate replication and transmission of genetic material during cell division. Pupils will also explore the processes of DNA replication and protein synthesis. They will understand the steps involved in DNA replication, including the role of enzymes and the importance of fidelity in maintaining the integrity of genetic information. Furthermore, they will learn about the central dogma of molecular biology, which describes how DNA is transcribed into RNA and translated into proteins. The topic also covers the concept of genetic diversity and variation. Pupils will study how genetic variation arises through processes such as mutation and recombination, and how it contributes to the diversity of species. They will explore the role of natural selection in driving evolution and shaping populations.</p>
Spring Two			
Summer One	<b>Variation and relationships between organisms</b>		<p>In this topic, pupils will delve into the concept of variation, both within and between species. They will explore the mechanisms that contribute to genetic and phenotypic variation, including genetic recombination, mutation, and environmental factors. Pupils will also learn about the importance of variation in driving evolutionary processes and adaptation.</p> <p>Pupils will study the classification and taxonomy of organisms, understanding how scientists organise and categorise living organisms based on their shared characteristics and evolutionary relationships. They will explore the hierarchical classification system, from domain to species, and learn about the principles of phylogenetics, which involve constructing evolutionary trees based on shared ancestry.</p> <p>The topic also covers the concept of biodiversity and its significance. Pupils will explore the importance of maintaining biodiversity for ecosystem stability and the challenges posed by human activities. They will investigate conservation strategies aimed at preserving biodiversity and protecting endangered species.</p>
Summer Two			