Curriculum Rationale and Overview (Scheme level)

Subject: Biology **Year group: 10**

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
National Curriculum context						
Scheme of Learning Title:	Cell biology	Organisation	Chemistry and/or physics taught	Photosynthesis and respiration	Chemistry and/or physics taught in this term	Ecology
Content *What will students know?*	The roles of different organelles in the prokaryote and eukaryotes. How the structures of prokaryotes and eukaryotes differ. How substances move into and out of cells	All reactions in organisms are controlled by enzymes The heart is an efficient pump for a transport system Fish and mammals require specialised transport systems		That plant cells and tissues are adapted to allow them to photosynthesise efficiently The reaction for photosynthesis Describe the two transport systems in plants. Plants also carry out respiration State how the lungs are adapted for efficient gas exchange The difference between breathing and respiration		How a changes to biotic and abiotic factors affect a community. How humans impact biodiversity How materials are cycled through a community
What will students understand?	Aerobic respiration is an essential activity for cells to grow, repair and replace themselves. Different cells have different structures based on function That organisms have specialist structures that increase the rates	That the heart is controlled by a specialist group of cells. How oxygen and carbon dioxide move into and out of the human body How substances are transported in the blood		How different environmental factors that interact to limit the rate of photosynthesis Water movement through a plant is affected by different environmental factors Water loss in a plant is a consequence of adaptations that are needed for efficient gas exchange. That multicellular organisms require specific		Why it is important to maintain biodiversity and how human population growth has affected biodiversity. How water and carbon are cycled through a community

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	of diffusion and osmosis	What blood cells look like when viewed under a microscope.		adaptations to their structure to allow for efficient gas exchange How damage to the organs in a system can lead to the development of non-communicable diseases How to reduce the chance of developing a non-communicable disease.		
What will students be able to do?	Predict the organelles found in a cell based on its function. Describe the difference between aerobic and anaerobic respiration Use a microscope independently to observe cells. How to test for starch and sugar Make predictions about the movement of substances based on a number of factors such as concentration.	Identify the different chambers of the heart Identify the features of an efficient exchange surface Suggest ways to reduce the chance of developing cardiovascular disease. Describe the action of enzymes using a lock and key model Test solutions for the presence of starch, sugar, fats and protein.		Identify the factors that will have the biggest impact on photosynthesis. Predict the impact of a change in the environment to the rate of photosynthesis Describe the structure of a leaf and root hair cells and relate this to maximising the rate of photosynthesis Identify different blood vessels based on their structure Describe the role of blood in the body Describe how blood moves through the heart Identify different parts of the heart and lungs based on features described.		Sample different organisms to measure biodiversity Explain how waste from humans has impacted the atmosphere and biodiversity Explain how microorganisms help to cycle materials through an ecosystem.
How will they be formally assessed?	End of topic test covering specification points 4.1.1.2 – 4.1.3.1.	End of unit assessment covering specification points 4.2.2.1.		End of topic test covering specification points 4.4.1.1 – 4.4.2.3		End of topic assessment covering specification points 4.7.1.1 – 4.7.3.6