Curriculum Summary Document Year 9 Science

Module/Unit of Learning	Term Taught	What will students learn?	How will this build a broad and strong foundation?	Links to other subjects
Cell Biology	Autumn 1	Students will explore how structural differences in cells enables them to perform specific functions within organisms when parts of tissues, organs and systems. Students will also consider the ethical issues surrounding the use of stem cells and current scientific technology. They will then go on to study cell transport – diffusion, osmosis and active transport. **Required Practical Skills** - Using a microscope and calculating magnification.	Cells and systems are a fundamental part of biology. Understanding of the basic structure of cells and the function of sub cellular structures. This allows students to link organ systems to how they function.	RSE – Ethics of stem cell use
Organisation	Autumn 1/2	Students learn about organs, organ systems and how they are adapted for their functions within the human body. They also study the digestive system and the importance of enzymes in digestion, as well as the circulatory system and non-communicable diseases such as coronary heart disease that may arise. **Required Practical Skills** - Testing foods for the presence of different food groups. - Investigating osmosis in plant tissue. - Investigating the effect of pH on amylase enzyme.	Learning about non-communicable disease and how these are impacted by lifestyle factors is important in ensuring students can make informed choices about their health as they approach adulthood. All bodily reactions are controlled by enzymes, understanding how these work links to reactions such as metabolism later on.	Catering/PSHE – Healthy diet/lifestyles.
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Atomic Structure & The Periodic Table	Autumn 1	Students will become familiar with the periodic table, linking physical and chemical properties to an elements position (group) and therefore electronic structure. They will learn about how the periodic table was developed over time, using both observation and prediction.	Understanding the structure of atoms is fundamental to the comprehension of chemistry and much of physics. It allows students to understand bonding, radiation and much more.	
Bonding, structure, and the properties of matter	Autumn 1/2	Students will explore the subatomic structure of atoms and how different types of bond from to achieve stability. They will build on previous knowledge of the periodic table to identify the type of bond formed (ionic, covalent or metallic) and explain the properties of these substances based on the bonding involved. Students will then explore some ….	Being able to link the structure and bonding that occurs in compounds allows students to better understand the properties of different materials and allows them to explain how they behave.	
Bioenergetics	Spring 1/2	Students will learn about the key biological processes of photosynthesis and respiration. They will then deepen their understanding by looking at how plants are adapted to maximise photosynthesis as well as studying the two types of respiration (aerobic and anaerobic). **Required Practical Skills** - Investigate factors affecting the rate of photosynthesis.	Photosynthesis is the reaction that is critical for life on Earth. Autotrophs are the producers in all food chains and provide the energy and oxygen for other species to survive. With the knowledge of the factors that affect photosynthesis students can predict the best conditions to maximise growth to provide food for	.PE – Respiration Geography –

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			a growing population.	
Chemistry of the atmosphere	Spring 1/2	Students will begin by exploring how our atmosphere has evolved since its formation and discuss how human actions are enhancing the greenhouse effect and other types of pollution.	Understanding the changing atmosphere and the impact of climate change/global warming improves scientific literacy in a time of global climate crisis.	
The Particle Model of Matter	Summer 1/2	Students will use the particle model to predict the behaviour of solids, liquids and gases; using knowledge of internal energy to explore temperature and state changes. **Required Practical Skills** - Determine the density of regular and irregular shapes objects.	This is a core concept in physics and allows students to explain how matter behaves. This links to the chemistry topic of rates where the particle model is used to explain collision theory.	
Atomic Structure and Radiation	Summer 1/2	Students will explore the 3 types of ionising radiation with a focus on properties, uses and hazards associated with each.	Understanding the properties of the 3 types of ionizing radiation allows students to make links to how they are used and the hazards that they must consider as they are encountered throughout life.	

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