Long Term Plan

In Y9 students will continue their journey in Science with the three sciences taught as separate disciplines, which provides the opportunity for students to start thinking like a Biologist, Chemist or Physicist rather than a 'Scientist'.

Year 9: Biology

	Learning Cycle	Key Concepts and Themes	Vocabulary
HT1	Human lifestyles, health and infectious diseases	• Diet and exercise • Pathogens • Preventing Infection	Carbohydrate, Lipid, Fibre, Sedentary, Symptom, Bacteria, Virus
HT1	Organisms and their environments	• Ecosystem components and dynamics • The water and carbon cycle • Interdependence	Biotic, Abiotic, Community, Decomposition, Bioremediation
HT2	Adaptation and evolution	• Explaining Evolution • Natural Selection	Habitat, Environment, Morphology, Physiology, Behaviour
HT2	Biodiversity, conservation and sustainability	• Threats to biodiversity • Conserving the environment • Sustainable living	Ecosystem, Biodiversity, Habitat, Conservation, Sustainable, Genetic Variation
HT3	Cells and their structure	• Structural differences between types of cells. • Cell specialisation and differentiation. • Microscopes and their use	Eukaryote, Prokaryote, Specialisation, Differentiation, Magnification, Aseptic techniques
HT4	Cell division and transport in cells	• Mitosis • Use of stem cells • Transport of substances in and out of cells	Mitosis, Chromosomes, Cytokinesis, Stem cells, Meristems, Diffusion, Osmosis , Active transport
HT5	Organisation	• Cells, tissues, organs, organ systems. • Human digestive system and the role of enzymes	Enzyme, Active site, Carbohydrase, Lipase, Protease, Emulsification
HT6	Cellular Biochemistry and Bioenergetics	• Photosynthesis • Respiration • Effect of exercise • Plant Nutrition	Photosynthesis, limiting factor, glucose, aerobic respiration, anaerobic respiration, oxygen debt, lactic acid

Skill Development	• To be able to plan an investigation to test a given hypothesis. • To be able to extrapolate data. • To be able to evaluate a scientific investigation and offer suggestions to improve the reliability and validity.

Long Term Plan

Year 9: Chemistry

In Y9 students will continue their journey in Science with the three sciences taught as separate disciplines, which provides the opportunity for students to start thinking like a Biologist, Chemist or Physicist rather than a 'Scientist'.

	Learning Cycle	Key Concepts and Themes	Vocabulary
HT1	Energy and Reactions	• Exothermic and endothermic reactions	Exothermic, Endothermic, Dissipation, Transfer, Insulation
HT1	Evaporation	• Difference between evaporation and boiling • Maxwell-Boltzmann Distribution	Evaporation, Boiling, Maxwell-Boltzmann, Surface Area
HT2	Air Pollution	• Air Quality	Smog, Eruption, Air quality index, Composition
HT2	Acids and Alkalis	• pH Scale • Neutralisation • Acid Rain	Neutralisation, Litmus, Effervescence, Base, Strong, Weak
HT3 / HT4	The Periodic Table	• Development of the periodic table • Trends in physical properties • Periodic Patterns	Group, Period, Property, Element, Metalloid
HT5 / HT6	Atomic Structure	• Structure of the nucleus and the development of the atomic model • Electron configuration • Mass Spectroscopy	Proton, Neutron, Electron, Nucleus, Charge, Abundance

Skill Development	• To be able to plan an investigation to test a given hypothesis. • To be able to extrapolate data. • To be able to evaluate a scientific investigation and offer suggestions to improve the reliability and validity.

Year 9: Physics

Long Term Plan

In Y9 students will continue their journey in Science with the three sciences taught as separate disciplines, which provides the opportunity for students to start thinking like a Biologist, Chemist or Physicist rather than a 'Scientist'.

	Learning Cycle	Key Concepts and Themes	Vocabulary
HT1	Making Images	• Ray Model • Refraction • Convex and Concave Lenses	Reflection, Refraction, Concave, Convex, Lens, Apparent Depth, Virtual Image, Inverted, Transmitted
HT1	More About Force	• Mass and Weight • Hidden Forces • Turning Effects	Contact Force, Non-Contact Force, Pivot, Normal Contact, Gravitational Force, Free Body Diagram, Centre of Mass, Mass, Weight, Compression, Extension, Stationary
HT2	Floating and Sinking	• Density • Pressure in fluids • Convection	Smog, Eruption, Air quality index, Composition
HT3	More Electric Circuits	• Resistance • Parallel Circuits	Group, Period, Property, Element, Metalloid
HT4	Magnetism	• Magnetic Fields • Electromagnets • The Motor Effect	Pole, Induced Magnet, Compass, Current, Solenoid, Electromagnet
HT5	Waves	• Waves on water and ropes • A wave model of sound	Proton, Neutron, Electron, Nucleus, Charge, Abundance
HT6	Energy	• Energy stores and systems • Specific Heat Capacity • Specific Latent Heat • Power and Efficiency • National and global energy resources	Energy Store, Specific Heat Capacity, Specific Latent Heat, Conservation, Dissipation, Power, Efficiency, Renewable, Non-Renewable, Hydro-electricity, Geothermal

Skill Development	• To be able to plan an investigation to test a given hypothesis. • To be able to extrapolate data. • To be able to evaluate a scientific investigation and offer suggestions to improve the reliability and validity.