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| **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** |
| **Year 9: Science** | **HT1** | Motion and Pressure | * Speed
* Motion graphs
* Pressure in gases
* Turning forces
 | atmospheric pressure, centre of gravity, centre of mass compress, distance–time graph, gas pressure, pressure, moment, motion, newton  |
| Inheritance | * Variation
* Displaying data
* How genes are inherited
 | Adaptation, biodiversity, chromosome, continuous variation, discontinuous variation, DNA, extinct, gene, evolution, natural selection, nucleus, species  |
| **HT2** | The Earth | * Layers of the Earth
* The carbon cycle
* Types of rock
 | Atmosphere, climate change, crust, Earth, global warming, greenhouse effect, igneous rock, metamorphic rock, porous, recycle, resource, reuse  |
| Cell systems | * Adaptations of exchange surfaces
* Photosynthesis and leaf structure
* Circulatory system
 | Enzyme, catalyst, carbohydrase, protease, lipase, alveolus photosynthesis, stomata, double circulatory system, transpiration |
| **HT3** | Particle model and state changes | * Particle model and changes of state
* Energy changes
 | Brownian motion, substance, foam, aerosol, sublimation, deposition, endothermic, exothermic  |
| Variation and natural selection | * Different types of adaptations
* Competition and natural selection
* Ecology – sampling and maintaining biodiversity
 | genetic variation, environmental variation, species, quadrat, transect, competition, sampling, natural selection, biotic, abiotic |
| **HT4** | Useful chemical reactions | * Reactivity series and displacement
* Extracting metals and using them.
* Calculating relative mass and yield
 | reactive displacement, reaction, electrolysis, catalytic converter, catalyst, transition metal, relative mass, theoretical yield, actual yield, percentage yield |
| Waves, sound and light | * Wave properties
* Reflection, refraction and colour
* The electromagnetic spectrum
 | Transverse, longitudinal, reflection refraction, focus, virtual, spectrum, secondary colours, primary colours, electromagnetic spectrum  |
| **HT5** | Energy Changes in a system | * Energy stores and systems
* Changes in energy
* Energy Changes in Systems
 | Energy, System, Joule, Transfer, Chemical, Kinetic, Gravitational Potential, Elastic, Thermal |
| The Periodic Table | * History of the Periodic Table and the modern Periodic Table
* Group 1 alkali metals, Group 7 halogens and Group 0 Noble gases
* Transition metals
 | Alkali metal, Trend, Halogen, Noble gas, Transition metal, property, boiling point, melting point, density, malleable, ductile, sonorous |
| **HT6** | Cells and their structure  | * Structural differences between types of cells, including cell specialisation.
* Microscopes and their use.
* Culturing microorganisms.
 | Eukaryote, Prokaryote, Specialisation, Differentiation, Magnification, Aseptic techniques |
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|  |  | **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.
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