Curriculum Plan Overview – Science

YEAR 7					
Autumn HT1	**Autumn HT2**	**Spring HT3**	**Spring HT4**	**Summer HT5**	**Summer HT6**
Biology Units **1 – Movement and 2 - Cells** These units provides students with an opportunity to work on **knowledge of organisms.** Key concepts: • The structure and function of cells that can be adapted and organised into tissues, organs and organ systems, which enable life processes to be effectively performed. • Life processes depend on molecules whose structures are related to their function **Chemistry Units** **1 – Particle Model** This units provides students with an opportunity to work on **knowledge of matter.** Key concepts: • What is matter • Arrangement of particles and subatomic particles **Physics Units** **1 – Speed and 2 - Gravity** This units provides students with an opportunity to work on **knowledge of forces.** Key concepts: • Matter interacts due to forces and/or energy transfer • Deductions in physics are built on cause and effect • The 4 forces of nature • Theories are used to explain observed phenomena and must be testable • Simplified models are used in practice		**Biology Units** **1 – Interdependence and 2 – Plant reproduction** These units provides students with an opportunity to work on **knowledge of ecosystems.** Key concepts: • Photosynthesis • Organic compounds • Interdependence and survival • The structure and function of cells that can be adapted and organised into tissues, organs and organ systems, which enable life processes to be effectively performed. • An organism's features are determined by its genome and its environment. **Chemistry Units** **1 – Separating Mixtures** This units provides students with an opportunity to work on **knowledge of matter.** Key concepts: • What is matter and how do they occur, elements • Arrangement of particles and subatomic particles governing physical and chemical properties **Physics Units** **1 – Potential Difference and Resistance and 2 - Current** This units provides students with an opportunity to work on **knowledge of electromagnets.** Key concepts: • Matter interacts due to forces and/or energy transfer • Deductions in physics are built on cause and effect • The 4 forces of nature • Theories are used to explain observed phenomena and must be testable • Simplified models are used in practice	**Chemistry Units** **1 – Acids and Alkalis, 2 – Metals and Non-Metals, 3 – Earth Structure, 4 – The Universe** These units provide students with an opportunity to work on **knowledge of reactions and the earth.** Key concepts: • Energy, atoms and mass • Chemical changes result in a new product being formed due to the rearrangement of atoms. • Arrangement of particles and subatomic particles • Impact of human activity on the Earth (atmosphere and resources) • The Earth's place in the Universe This term focusses on the 4 units of work in Chemistry.	

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YEAR 8					
Autumn HT1	**Autumn HT2**	**Spring HT3**	**Spring HT4**	**Summer HT5**	**Summer HT6**
Biology Units **1 – Variation and 2 – Human Reproduction** These units provide students with an opportunity to work on **knowledge of genes.** Key concepts: • Living organisms are interdependent on each other for survival and are adapted to survive in their environments. • An organism's features are determined by its genome and its environment. • The structure and function of cells that can be adapted and organised into tissues, organs and organ systems, which enable life processes to be effectively performed. **Chemistry Units** Y8 focus on biology and physics units for the Autumn Term. **Physics Units** **1 – Energy Costs, 2 – Energy Transfer, 3 – Sound and 4 - Light** This units provides students with an opportunity to work on **knowledge of energy and waves.** Key concepts: • Matter interacts due to forces and/or energy transfer • Deductions in physics are built on cause and effect • The 4 forces of nature • Matter can be described in terms of the different stores of energy • Theories are used to explain observed phenomena and must be testable • Simplified models are used in practice • Energy propagates via waves		**Biology Units** **1 – Breathing and 2 - Digestion** These units provide students with an opportunity to work on **knowledge of organisms.** Key concepts: • The structure and function of cells that can be adapted and organised into tissues, organs and organ systems, which enable life processes to be effectively performed. • Life processes depend on molecules whose structure is related to their function **Chemistry Units** **1 – Elements and 2 – Periodic Table** This units provides students with an opportunity to work on **knowledge of matter.** Key concepts: • What is matter and how do they occur, elements • Arrangement of particles and subatomic particles governing physical and chemical properties • Conservation of energy, type and atoms during reactions. **Physics Units** Y8 focus on biology and chemistry units for the Spring Term.		**Biology Units** **1 – Respiration and 2 - Photosynthesis** These units provide students with an opportunity to work on **knowledge of ecosystems.** Key concepts: • The structure and function of cells that can be adapted and organised into tissues, organs and organ systems, which enable life processes to be effectively performed. • Life processes depend on molecules whose structure is related to their function • All life on Earth depends on photosynthetic organisms **Chemistry Units** **1 – Types of Reaction and 2 – Chemical Energy** These units provide students with an opportunity to work on **knowledge of reactions.** Key concepts: • What is matter and how do they occur, elements • Arrangement of particles and subatomic particles governing physical and chemical properties • Conservation of energy, type and atoms during reactions. • Chemical changes result in a new product being formed due to the rearrangement of atoms. **Physics Units** **1 – Contact Forces and 2 - Pressure** This units provides students with an opportunity to work on **knowledge of forces.** Key concepts: • The particle model of matter • Matter interacts due to forces and/or energy transfer • Theories are used to explain observed phenomena and must be testable • Simplified models are used in practice	

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<table>
<tr><th colspan="6">YEAR 9</th></tr>
<tr><th>Autumn HT1</th><th>Autumn HT2</th><th>Spring HT3</th><th>Spring HT4</th><th>Summer HT5</th><th>Summer HT6</th></tr>
<tr>
<td colspan="2"><u>Biology Units</u>

Y9 focus on physics and chemistry units for the Autumn Term.

<u>Chemistry Units</u>
<u>1 – Chemistry New Technology and 2 – Turning Points in Chemistry</u>
This units provides students with an opportunity to work on knowledge of matter, reactions and the Earth.
Key concepts:
• What is matter and how do they occur, elements
• Arrangement of particles and subatomic particles governing physical and chemical properties
• The impact of human activity on the Earth’s atmosphere and resources.

<u>Physics Units</u>
<u>1 – New Technology and 2 – Physics Detection</u>
This units provides students with an opportunity to work on knowledge of electromagnets, energy and waves.
Key concepts:
• Matter interacts due to forces and/or energy transfer
• Deductions in physics are built on cause and effect
• The 4 forces of nature
• Matter can be described in terms of the different stores of energy
• Theories are used to explain observed phenomena and must be testable
• Simplified models are used in practice
• Deductions in physics are built on cause and effect
• The particle model of matter</td>
<td colspan="2"><u>Biology Units</u>

<u>1 – Biology Detection</u>

These units provides students with an opportunity to work on knowledge of organisms and genes.
Key concepts:
• The structure and function of cells that can be adapted and organised into tissues, organs and organ systems, which enable life processes to be effectively performed.
• Living organisms are interdependent on each other for survival and are adapted to survive in their environments.
• An organism’s features are determined by its genome and its environment.

<u>Chemistry Units</u>

<u>1 – Chemistry detection</u>
This units provides students with an opportunity to work on knowledge of matter.
Key concepts:
• What is matter and how do they occur, elements
• Arrangement of particles and subatomic particles governing physical and chemical properties

<u>Physics Units</u>

Y9 focus on biology and chemistry units for the Spring Term.</td>
<td colspan="2"><u>Biology Units</u>
<u>1 – Cell Structure and Transport and 2 – Cell Division</u>
These units provide students with an opportunity to work on knowledge of cell biology.
Key concepts:
• The structure and function of cells that can be adapted and organised into tissues, organs and organ systems, which enable life processes to be effectively performed.
• Life processes depend on molecules whose structure is related to their function

<u>Chemistry Units</u>
<u>1 – Atomic Structure and 2 – The Periodic Table</u>
These units provide students with an opportunity to work on knowledge of atomic structure and the periodic table.
Key concepts:
• What is matter and how do they occur, elements
• Arrangement of particles and subatomic particles governing physical and chemical properties
• Conservation of energy, type, mass and atoms during reactions.

<u>Physics Units</u>
<u>1 – Conservation and Dissipation of Energy and 2 – Energy Transfer by Heating</u>
This units provides students with an opportunity to work on knowledge of energy.
Key concepts:
• The particle model of matter
• Matter interacts due to forces and/or energy transfer
• 4 fundamental forces of nature
• Theories are used to explain observed phenomena and must be testable
• Simplified models are used in practice
• Deductions in physics are built on cause and effect</td>
</tr>
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YEAR 10		
Autumn Term	**Spring Term**	**Summer Term**
Biology Units **B3 – Organisation and the Digestive System and B4 – Organising Animals and Plants** These units provide students with an opportunity to work on **knowledge of organisation.** Key concepts: • The structure and function of cells that can be adapted and organised into tissues, organs and organ systems, which enable life processes to be effectively performed. • Life processes depend on molecules whose structure is related to their function **Chemistry Units** **C3 – Structure and bonding, C4 – Chemical calculations and C5 – Chemical Changes** These units provide students with an opportunity to work on **knowledge of chemical changes, quantitative chemistry and bonding, structure and the properties of matter.** Key concepts: • What is matter and how do they occur, elements • Arrangement of particles and subatomic particles governing physical and chemical properties • Atoms bond either by transferring electrons from one atom to another or by sharing electrons • Types of bonding – governance the properties of a substance **Physics Units** **P3 – Energy Resources and P4 – Electric Circuits** This units provides students with an opportunity to work on **knowledge of energy and electricity.** Key concepts: • Matter interacts due to forces and/or energy transfer • 4 fundamental forces of nature	**Biology Units** **B5 – Communicable Diseases, B6 – Preventing and Treating Disease and B7 – Non-communicable Diseases** These units provide students with an opportunity to work on **knowledge of infection and response.** Key concepts: • The structure and function of cells that can be adapted and organised into tissues, organs and organ systems, which enable life processes to be effectively performed. • Life processes depend on molecules whose structure is related to their function **Chemistry Units** **C6 – Electrolysis and C7 – Energy Changes** These units provide students with an opportunity to work on **knowledge of chemical changes and energy changes.** Key concepts: • What is matter and how do they occur, elements • Arrangement of particles and subatomic particles governing physical and chemical properties • Conservation of energy, type, mass and atoms during reactions. • Chemical changes result in a new product being formed due to the rearrangement of atoms. **Physics Units** **P5 – Electricity in the Home, P6 – Molecules and Matter and P7 - Radioactivity** This units provides students with an opportunity to work on **knowledge of atomic structure, particle model of matter and electricity.** Key concepts: • Matter interacts due to forces and/or energy transfer • 4 fundamental forces of nature	**Biology Units** **B8 – Photosynthesis, B9 – Respiration, B10 – The Human Nervous System and B11 – Hormonal Coordination** These units provide students with an opportunity to work on **knowledge of bioenergetics and homeostasis and response.** Key concepts: • All life on Earth depends on photosynthetic organisms to produce organic compounds. • Organic compounds are used as the fuels in cellular respiration to provide the energy required for the other chemical reactions necessary for life processes to occur. • The structure and function of cells that can be adapted and organised into tissues, organs and organ systems, which enable life processes to be effectively performed. **Chemistry Units** **C8 – Rates and Equilibrium** These units provide students with an opportunity to work on **knowledge of the rate and extent of chemical change.** Key concepts: • Arrangement of particles and subatomic particles governing physical and chemical properties • Chemical changes result in a new product being formed due to the rearrangement of atoms. • Reactions can occur when molecules collide and do so at different rates due to differences in molecular collisions. **Physics Units** **P8 – Forces in Balance and P9 - Motion** This units provides students with an opportunity to work on **knowledge of forces.** Key concepts: • Matter interacts due to forces and/or energy transfer • 4 fundamental forces of nature

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• All matter can be described in terms of the different stores of energy • Theories are used to explain observed phenomena and must be testable • Simplified models are used in practice • Deductions in physics are built on cause and effect	• All matter can be described in terms of the different stores of energy • Theories are used to explain observed phenomena and must be testable • Simplified models are used in practice • Deductions in physics are built on cause and effect	• Theories are used to explain observed phenomena and must be testable • Simplified models are used in practice • Deductions in physics are built on cause and effect

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YEAR 11		
Autumn Term	**Spring Term**	**Summer Term**
Biology Units **B10 – The human nervous system, B11 – Hormonal coordination, B12 – reproduction and B13 – variation and evolution** These units provide students with an opportunity to work on **knowledge of inheritance, variation and evolution, and homeostasis and response.** Key concepts: • The structure and function of cells that can be adapted and organised into tissues, organs and organ systems, which enable life processes to be effectively performed. • An organism's features are determined by its genome and its environment. • Evolution happens by a process of natural selection but can be manipulated with human intervention. **Chemistry Units** **C9 – Crude oil and fuels, C10 – Chemical Analysis and C11 – The Earth's Atmosphere** These units provide students with an opportunity to work on **organic chemistry, chemistry analysis and using resources.** Key concepts: • What is matter and how do they occur, elements • Energy, type and number of atoms, and mass are all conserved during chemical reactions. • Chemical changes result in a new product being formed due to the rearrangement of atoms. • The impact of human activity on the Earth's atmosphere and resources. **Physics Units** **P11 – Wave Properties** This units provides students with an opportunity to work on **knowledge of waves.** Key concepts: • Energy propagates via waves	**Biology Units** **B14 – Genetics and Evolution, B15 – Adaptations, Interdependence and competition, B16 – Organising an organism and B17 – Biodiversity and ecosystems** These units provide students with an opportunity to work on **knowledge of ecology, and inheritance, variation and evolution.** Key concepts: • An organism's features are determined by its genome and its environment. • Evolution happens by a process of natural selection but can be manipulated with human intervention. • Living organisms are interdependent on each other for survival and are adapted to survive in their environments. • Life processes depend on molecules whose structures is related to their function. **Chemistry Units** Y11 move to biology and physics for Spring Term. **Physics Units** **P12 – Electromagnetic Waves and P13 - Electromagnetism** This units provides students with an opportunity to work on **knowledge of magnetism and electromagnetism and waves.** Key concepts: • Energy propagates via waves • Theories are used to explain observed phenomena and must be testable • Simplified models are used in practice • Deductions in physics are built on cause and effect	**Year 11 move to revision programme prior to final examinations.**

• Theories are used to explain observed phenomena and must be testable • Simplified models are used in practice • Deductions in physics are built on cause and effect		