


Year 7: Science	Curriculum Intent: Students will be given an introduction into laboratory safety, the equipment they will use in secondary school science and reporting and recording of results. Students then study modules in Chemistry, Biology and Physics. Students will secure a strong grounding in the fundamental principles of Chemistry, Biology and Physics through the studying of individual subject modules. These areas will be further built upon in Year 8, so a strong grasp of the key questions and the key practical skills are crucial. This core knowledge and procedural knowledge will be taught and revisited, ensuring the key questions are the central focus of lesson content. Students will get the opportunity to demonstrate their knowledge through practical investigations, challenging tasks and assessments.					
Key ideas and sequence of Learning	Autumn 1 Induction module <ul style="list-style-type: none"> Safety in the lab How to safely use lab equipment Understanding and applying disciplinary vocabulary Chemistry module 1 - particles <ul style="list-style-type: none"> Pure/mixtures Atom Particles States of matter 	Autumn 2 Biology module 1- life processes <ul style="list-style-type: none"> Skeletal structure (bones and muscles) Biological molecules (as part of balanced diet) Digestion (including importance of bacteria) Physics module 1- motion <ul style="list-style-type: none"> Speed Acceleration and deceleration. Motion graphs Chemistry module 2 – periodic table <ul style="list-style-type: none"> Atomic structure Protons, electrons, and neutrons (PEN) Non-metal/metal Group 1 and 7 	Spring 1 Biology module 2 - cells <ul style="list-style-type: none"> Plant and Animal cells (similarities and differences) Planet and animal reproduction Structures Menstrual cycle Fertilisation Pregnancy Physics module 2 – waves <ul style="list-style-type: none"> Categorisation of waves light and sound electromagnetic spectrum 	Spring 2 Chemistry module 3 – chemical reactions <ul style="list-style-type: none"> Exothermic/ endothermic reactions pH scale Neutralisation Conservation of mass Biology module 3 – ecosystems <ul style="list-style-type: none"> Ecosystems Food webs and chains Sampling Biodiversity Variation Adaptations 	Summer 1 Physics module 3- electricity <ul style="list-style-type: none"> circuits currents. Potential difference and energy Components and resistance. <p>Students will then revise for their end of year exams.</p>	Summer 2 Chemistry module 4 - Earth and environmental science <ul style="list-style-type: none"> Atmosphere Pollution Climate change Rock cycles Biology module 4- modern biology <ul style="list-style-type: none"> Unicellular organisms Illnesses and vaccines Modern medicine – links with History topic of medicine through time (timeline of recent discoveries)

Key Questions

Induction module

1. What dangers are there in a laboratory?
2. How do I use a Bunsen burner, microscope, and other lab equipment?
3. How do I observe, record and analyse experimental results?

Chemistry module 1- particles

1. What are solid, liquids and gases?
2. What are particles?
3. How are particles arranged in solids, liquids and gases?
4. What makes up particles?
5. What are the symbols of some of the atoms?
6. What is a pure substance?
7. What is a mixture?

Biology module 1-Life processes

1. How do we move?
2. How to eat healthily?
3. How do we test to see what is in food?
4. What happens to the food we eat?

Physics Module 1- motion

1. What is speed and how do we calculate it and measure it?
2. How can you represent a journey on a distance-time graph?
3. What is acceleration and how can you calculate and measure it?
4. How can you represent a journey on a speed-time graph?

Chemistry module 2 – periodic table

1. What are particles made of?
2. What do atoms look like?
3. How do you read the periodic table?

Biology module 2-cells

1. What are cells?
2. How are plant and animal cells different?
3. How do plants reproduce?
4. How do mammals reproduce?

Physics module 2 – waves

1. What are longitudinal and transverse waves?
2. What are amplitude, wavelength, frequency?
3. What can waves do?
4. What are the parts of the EM spectrum?
5. How do we detect light and sound?
6. What are lenses and their uses?

Chemistry module 3 – chemical reactions

1. What is a chemical reaction equation?
2. What is mass?
3. What happens to the atoms in a chemical reaction?
4. What are signs of a chemical reaction?
5. What are exothermic and endothermic reactions?
6. What are acids?
7. What are alkalis?
8. How do you detect acids and alkalis?
9. What is neutralisation?

Biology module 3 – ecosystems

1. How are organisms interdependent?
2. What is biodiversity?
3. Why is biodiversity important for a sustainable future?
4. How does variation lead to adaptations and variety?

Physics module 3- electricity

1. How do we draw and make a circuit?
2. What are insulators and conductors?
3. How do we measure current and potential difference?
4. What is the effect of changing potential difference?
5. What are the effects of adding more components on current & how is potential difference shared between components?
6. What is the effect of increasing the length of wire on current?

Chemistry module 4 - Earth and environmental science

1. What is the structure of the earth?
2. What are the different types of rocks?
3. How does the rock cycle recycle matter?
4. What is in the atmosphere?
5. What are the different pollutants?
6. What is a greenhouse gas and the greenhouse effect?
7. What are effects of climate change & how can you reduce it?

Biology module 4- modern biology

1. What causes illnesses & how do they spread?
2. What are the types of illness?
3. How do we treat illnesses?
4. How has science impacted upon the treatment of disease?
 - a) Microscope invention and development
 - b) Cholera and J. Snow
 - c) E. Jenner and Smallpox vaccines and links to COVID-19

(symbols and numbers)

4. How to use PEN?
5. Where to find metals and non-metals?
6. How do you identify metals?
7. How reactive are different metals?
8. What is in group 1?
9. What is in group 7?
10. How can you find the trend in reactivity in a group?
11. How can you find a trend in reactivity with metals in different groups?

<p style="text-align: center; color: purple;">Vocabulary</p>	<p>Induction</p> <ul style="list-style-type: none"> • Accuracy • Precision • Repeatability • Reproducibility. <p>Chemistry module 1- particles</p> <ul style="list-style-type: none"> • Solid • Liquid • Gas • Particle • Atom • Pure • Impure • Mixture • Chemical symbol 	<p>Biology module 1-Life processes</p> <ul style="list-style-type: none"> • Antagonistic, skeletal, tendons, ligaments • Carbohydrates, Proteins, Lipids/Fats • Absorption, enzymes <p>Physics Module 1-motion</p> <ul style="list-style-type: none"> • Speed • Acceleration • Deceleration • Distance • Time • Equation • Distance-time graph • Speed- time graph <p>Chemistry module 2 – periodic table</p> <ul style="list-style-type: none"> • Atoms, nucleus • Protons, electrons, neutrons • Shells, orbit • Periods, groups • Periodic table • Element • Metal, non-metal • Displacement 	<p>Biology module 2-cells</p> <ul style="list-style-type: none"> • Organelle, cell membrane, cell wall, nucleus, vacuole, cytoplasm, mitochondria, chloroplast, chlorophyll • Stamen, stigma, anther, filament, pollen tube, ovary, style • Penis, semen, vagina, ovary, fallopian tube/oviduct, uterus, cervix, scrotum, testes, urethra, prostate gland • Testosterone, progesterone, oestrogen, period, uterine lining, ovulation, menstrual cycle <p>Physics module 2 – waves</p> <ul style="list-style-type: none"> • Longitudinal • Transverse • Amplitude • Frequency • Wavelength • Refraction 	<p>Chemistry module 3 – chemical reactions</p> <ul style="list-style-type: none"> • Chemical equation • Mass • Endothermic • Exothermic • Acid • Alkali • Base • Neutralisation • pH • pH scale • Neutral • Conservation • Indicator <p>Biology module 3 – ecosystems</p> <ul style="list-style-type: none"> • Ecosystem, habitat, population, community, organism • Biodiversity • Adaptations, Darwin, Survival of the fittest, Lamarck • Variation, genetic, environmental 	<p>Physics module 3-electricity</p> <ul style="list-style-type: none"> • Conductors • insulators • Loop • Path • Components • Current • Series • Parallel • Voltage • Potential Difference • Resistance • Flow • Energy 	<p>Chemistry module 4 - Earth and environmental science</p> <ul style="list-style-type: none"> • Inner core • Outer core • Mantle • Crust • Atmosphere • Nitrogen • Oxygen • Greenhouse gases • Climate change • Sedimentary • Igneous • Metamorphic • Sedimentation • Deposition • Lava/magma • Erosion/weathering • Acid rain • Pollutants • Transportation • Compression <p>Biology module 4- modern biology</p> <ul style="list-style-type: none"> • Bacteria, virus, pathogen, fungi, • communicable and non-communicable, inherited, lifestyle • Antibiotics, antiseptics, antivirals, vaccines • Microscopes, cholera,
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| | | | <ul style="list-style-type: none">• Reflection• Electromagnetic spectrum• Lens• Retina• Ciliary Muscles• Ear bones• Cochlea• Auditory nerve• Absorption• Normal• Raybox | | | |
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<p style="text-align: center;">Practical Skills</p>	<p>Induction</p> <ul style="list-style-type: none"> Using a Bunsen burner Using a microscope Using various pieces of laboratory equipment to measure Observing chemical reaction Collecting data Tabulating data Control variables Plotting graphs Interpreting graphs <p>Chemistry module 1- particles</p> <ul style="list-style-type: none"> Investigating non-Newtonian fluids Building model compounds with Molymod kits– making mixtures and pure substances 	<p>Biology module 1- life processes</p> <ul style="list-style-type: none"> Food tests Visking tubing model for digestion <p>Physics Module 1- motion</p> <ul style="list-style-type: none"> Measuring time Measuring distance <p>Chemistry module 2 – periodic table</p> <ul style="list-style-type: none"> Determining the order of reactivity of group 1 elements (Alkali metal demo) – observations Investigation how the atom is mostly empty space (Balloon skewer) – explanation Determining the order of reactivity of group 7 elements (Halogen displacement) Determining the order of reactivity of metal elements (Metal displacement) Flame tests – identifying elements 	<p>Biology module 2- cells</p> <ul style="list-style-type: none"> How to setup a light microscope and prepare a slide for viewing Draw a biological drawing <p>Physics module 2 – waves</p> <ul style="list-style-type: none"> Using a raybox Investigating reflection and refraction 	<p>Chemistry module 3 – chemical reactions</p> <ul style="list-style-type: none"> Types of chemical reactions circus – determining the types of reaction Endothermic/ exothermic circus Red cabbage indicator to test the pH of acids and alkalis Universal indicator neutralisation Most reactive acid – magnesium reacting with different acids <p>Biology module 3 – ecosystems</p> <ul style="list-style-type: none"> Flower dissection Seed dispersal investigation Sampling – quadrats/pitfall traps/pooters Class variation data gathering investigation – eye, hair colour, hand span, ear lobes, scars, tongue rolling, piercings, gender 	<p>Physics module 3- electricity</p> <ul style="list-style-type: none"> Wiring a circuit Drawing circuit diagrams Measuring current and potential difference 	<p>Chemistry module 4 - Earth and environmental science</p> <ul style="list-style-type: none"> Rock cycle- using crayons, chocolate, or sweets to demonstrate the conditions to make each type of rock Combustion of a candle demo Gas tests <p>Biology module 4- modern biology</p> <ul style="list-style-type: none"> Investigating the growing of microbes (washed and unwashed hands) Mask investigation (planning investigation skills)
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