

Timescale	Autumn			
Prior Learning (from KS2/3)	Yr 3 – Functions of the skeleton & how muscles help us move Year 7 – Cells & Organisation, Digestion & Nutrition & Health	Year 7 – Particles	Year 7 – Light and sound, Electricity	Year 7 – Cells and organisation Year 8 – Biological Systems 7 Processes
Unit Title	1. Biological Systems and Processes	2. Atoms and the Periodic Table	3. Energy	4. Plants & Photosynthesis
Key knowledge (5-10 points)	<ol style="list-style-type: none"> 1. State the structure and function of the skeleton. 2. Name the three types of joint and give examples of each. 3. Describe how problems can occur with joints. 4. Explain how muscles work in antagonistic pairs. 5. Investigate muscle strength. 6. Explain how changes in volume and pressure inside the chest move gases in and out of the lungs 7. Describe simple ways of measuring lung volume 8. Explain how the parts of the gas exchange system are adapted to their function. 9. Explain how exercise, smoking and asthma affect the gas exchange system. 10. Recall the equation for respiration and explain the importance of respiration in living organisms 11. Analyse experimental evidence for respiration 12. Describe where in the cell respiration takes place 13. Describe anaerobic respiration and suggest when this takes place 14. Describe the process of fermentation and give examples of uses in industry 	<ol style="list-style-type: none"> 1. Define and recognise examples of elements, mixtures and compounds 2. Link properties of elements to their position on the periodic table 3. Recognise that ideas on the structure of atoms has changed over time 4. Identify structures within an atom 5. Describe how electrons are arranged in different atoms 6. Describe the properties of metals and non-metals 7. Identify where alkali metals appear on the periodic table and describe similarities and differences in terms of structure and reactivity 8. Identify the halogens on a periodic table and describe similarities and differences in terms of structure and reactivity 	<ol style="list-style-type: none"> 1. Recognise different forms of energy and energy transfer pathways 2. Calculate energy efficiency and (some) display these using Sankey diagrams 3. Label the parts of a power station and describe the main energy transfers in a power station 4. Describe different forms of renewable and non-renewable energy 5. Label parts of the National Grid and describe their purpose 6. Define and calculate power 7. Calculate the cost of using different electrical appliances 8. Describe why we need energy and compare the energy requirements of different people 9. Investigate energy in different types of food 	<ol style="list-style-type: none"> 1. Identify the various ways in which plants are essential to life on Earth 2. Identify the reactants and products of photosynthesis 3. Describe the structure of a leaf and explain how leaves are adapted for efficient photosynthesis 4. Describe how the movement of gases into and out of a leaf is controlled by stomata 5. Identify and then investigate factors that can affect the rate of photosynthesis 6. Interpret graphs on limiting factors 7. Explain how water and minerals move through a plant 8. Identify minerals needed by plants and what happens if plants are deficient in these minerals

Key terminology	<i>skeleton, joint, muscle, antagonistic, contract, relax, cartilage, ligament, tendon, arthritis, Diaphragm, intercostal, trachea, bronchi, bronchioles, alveoli, capillary, respiration, mitochondria, fermentation</i>	<i>Element. Atom, compound, mixture, molecule, periodic table, trend, group, nucleus, proton, neutron, electron, reactivity</i>	<i>Kinetic, store, transfer, efficiency, conservation, Sankey diagram, renewable, non-renewable, power, kilowatt-hour, appliance</i>	<i>Photosynthesis, starch, glucose, cuticle, epidermis, palisade, chloroplast, chlorophyll, stomata, cellulose</i>
Assessment (methods to assess)	<ul style="list-style-type: none"> - End of unit assessment /20 - Term 1 assessment 	<ul style="list-style-type: none"> • End of unit assessment /20 • Term 1 assessment 	<ul style="list-style-type: none"> • End of unit assessment /20 • Term 1 assessment 	<ul style="list-style-type: none"> • End of unit assessment /20 • Term 1 assessment
Links to other units in KS3/4.	<ul style="list-style-type: none"> • Year 9 – Cell Biology 1, Organisation 1 • Year 10 Organisation 2, Bioenergetics 	<ul style="list-style-type: none"> • Year 8 – Reactivity of metals • Year 9 – Atomic structure and the periodic table, Bonding, structure and the properties of matter, Quantitative chemistry • Year 10 – Chemical changes, Energy changes • Year 11 – Organic chemistry, Chemistry of the atmosphere, Chemical analysis 	<ul style="list-style-type: none"> • Year 9 – Energy 1 • Year 10 – Energy 2, Waves 	<ul style="list-style-type: none"> • Year 9 – Cell Biology, Organisation • Year 10 – Bioenergetics • Year 11 – Ecology

Timescale	Spring			
Prior Learning (from KS2/3)	Year 7 – Cells & Organisation, reproduction Year 8 – Energy, Plant and photosynthesis	Year 7 – Particulate Nature of Matter, Acids & Alkalis	Year 7 – Forces	Year 7 – Particles Year 8 – Atoms & the Periodic Table
Unit Title	1. Interactions and evolution	2. Chemical Reactions	3. Forces in Action	4. Matter
Key knowledge (5-10 points)	<ol style="list-style-type: none"> 1. Draw food chains and interpret food webs 2. Construct and interpret pyramids of number and biomass 3. Describe and explain the relationship between predator-prey populations 4. Describe how toxins can pass along a food chain 5. Identify generalist and specialist species and outline the advantages/disadvantages of each type 6. Identify how different organisms are adapted to their environment 	<ol style="list-style-type: none"> 1. Recognise physical and chemical Reactions 2. Write word equations 3. Understand the law of Conservation of mass and write symbol equations 4. Describe the process of combustion 5. Describe the process of thermal decomposition 6. Identify what happens in oxidation reactions 7. Distinguish between endothermic and exothermic Reactions 	<ol style="list-style-type: none"> 1. Identify different forces 2. Describe how resultant forces affect the motion of an object 3. Understand the relationship between weight, mass & gravity 4. Calculate work done 5. Understand the relationship between force, mass & acceleration 6. Investigate Hooke's law 7. Interpret Distance-Time Graphs 8. Interpret Speed – Time Graphs 9. Calculate moments 	<ol style="list-style-type: none"> 1. Distinguish between pure and impure substances 2. Identify substances that are soluble and insoluble. 3. Investigate solubility. 4. Interpret solubility curves. 5. Separate insoluble solids using filtration. 6. Separate soluble solids using evaporation. 7. Separate a mixture of liquids using distillation 8. Separate a mixture of soluble liquids using chromatography

	7. Explain how adaptations enable organisms to survive in their environment 8. Explain the process of natural selection 9. Explain why species have become endangered or extinct			
Key terminology	<i>Producer, consumer, biomass, bioaccumulation, generalist, specialist, adaptation, evolution, natural selection, endangered, extinction</i>	<i>Physical reaction, chemical reaction, reactant, product, reversible, combustion, decomposition, oxidation, exothermic, endothermic</i>	<i>Stationary, resultant force, acceleration, vector, scalar, proportional, extension, deform, moment, equation</i>	<i>Pure, Impure, solute, solvent, solution, soluble, insoluble, solubility, filtration, evaporation, distillation, chromatography</i>
Assessment (methods to assess)	<ul style="list-style-type: none"> End of unit assessment /20 Term 2 assessment 	<ul style="list-style-type: none"> End of unit assessment /20 Term 2 assessment 	<ul style="list-style-type: none"> End of unit assessment /20 Term 2 assessment 	<ul style="list-style-type: none"> End of unit assessment /20 Term 2 assessment
Links to other units in KS3/4.	<ul style="list-style-type: none"> Year 9 – Cell biology, Organisation Year 10 – Infection and response, Bioenergetics, Inheritance, variation and evolution Year 11 – Ecology 	<ul style="list-style-type: none"> Year 8 – Atoms, elements and the periodic table, Reactivity of metals Year 9 – Quantitative chemistry Year 10 – Chemical changes, Energy changes Year 11 – Organic chemistry, Chemistry of the atmosphere 	<ul style="list-style-type: none"> Year 10 – Forces Year 11 – Magnetism & Electromagnetism 	<ul style="list-style-type: none"> Year 9 – Atoms & the Periodic Table 1 and 2, Chemical Changes 1 Year 10 – Chemical Changes 2 Year 11 – Organic chemistry, Using Resources

Timescale	Summer			
Prior Learning (from KS2/3)	Year 7 – Acids and alkalis	Year 7 – Particulate nature of matter, Acids and alkalis Year 8 – Chemical reactions, Atoms. Elements and the periodic table	Year 7 – Cells and organisation, Reproduction Year 8 – Plant biology, Interactions and evolution	
Unit Title	1. Earth & Atmosphere	2. Reactivity of Metals	3. Genetics	
Key knowledge (5-10 points)	1. Label the structure of Earth 2. Identify plate tectonics 3. Recognise gases in Earth's atmosphere 4. Recognise the impact of humans on air pollution 5. Describe how acid rain is formed and its consequences 6. Describe how greenhouse gases lead to global warming and explain the consequences	1. Identify common metals and link properties to their uses 2. Select metals most appropriate for a particular use and justify the selection 3. Place metals in order of their reactivity 4. Describe what happens when a metal is displaced from a compound and	1. Identify examples of inherited or environmental variation 2. Classify examples of variation as discontinuous or continuous 3. Describe how inheritance is controlled by our genes 4. Describe the structure of DNA	

	7. Describe the carbon cycle	<p>predict reactions using the reactivity series</p> <ol style="list-style-type: none"> Recall that most metals are found combined with other elements, as a compound, in ores Recall what is meant by the process of oxidation Recall that the more reactive a metal, the more difficult it is to separate it from its compound Recall that carbon displaces less reactive metals, while electrolysis is needed for more reactive metals Justify the choice of extraction method for a metal, given data about reactivity 	<ol style="list-style-type: none"> Describe the process of selective breeding Recognise how organisms are placed into groups using classification systems 	
Key terminology	<i>Atmosphere, core, mantle, crust, tectonic plate, continent, volcano, combustion, pollution, climate, greenhouse gas, global warming, radiation</i>	<i>Extracting, ore, electrolysis, oxidation, displacement, salt, corrosion, malleable, mineral, extraction, recycling</i>	<i>Species, Variation, characteristic, continuous, discontinuous, inheritance, fertilisation, chromosome, DNA</i>	
Assessment (methods to assess)	<ul style="list-style-type: none"> End of unit assessment /20 Term 3 assessment 	<ul style="list-style-type: none"> End of unit assessment /20 Term 3 assessment 	<ul style="list-style-type: none"> End of unit assessment /20 Term 3 assessment 	
Links to other units in KS3/4.	<ul style="list-style-type: none"> Year 8 –Plant Biology, Photosynthesis and respiration, Reactivity of metals Year 9 – Quantitative chemistry Year 10 – Chemical changes, Bioenergetics Year 11 – Organic chemistry, Chemistry of the atmosphere, Using resources 	<ul style="list-style-type: none"> Year 9 – Atomic structure and the Periodic Table, Bonding, structure and the properties of matter, Quantitative chemistry Year 10 – Chemical changes, Energy changes Year 11 – Using resources 	<ul style="list-style-type: none"> Year 9 Cell Biology 1 Year 10 Cell Biology 2 Year 11 Inheritance, variation and evolution 	