



SUNNYDOWN SCHOOL

SCIENCE CURRICULUM PLAN

Subject	Science	Year group	Y10
Subject Intent	<p>In Year 10, students will continue to develop their scientific knowledge and skills for Combined Science: Trilogy. They will study through working scientifically, including a series of practicals, and a focus on literacy and communication in order to cultivate confidence in expressing their understanding of the three disciplines biology, chemistry and physics. In addition to the academic part of Science we also help to develop an understanding of personal, social and health issues such as drugs, sex and the importance of a healthy lifestyle, which prepares them for all types of relationships in their futures</p> <p>They will be split into 2 pathways, with the higher pathway accessing the higher content of the AQA trilogy course.</p> <p>In Year 10 Biology, pupils will learn Cell Biology, Organisation, Infection and Response and Bioenergetics.</p> <p>In Chemistry: Atomic Structure, Bonding and Structure, Chemical Energy and Energy Changes.</p> <p>In Physics: Energy, Electricity, Particle Model of Matter and Atomic Structure.</p>		

Term	Topic	Core learning	Key concepts	Sequencing
Autumn 1	Cell Biology (Biology) Atomic Structure (Chemistry)	Cell Biology <ul style="list-style-type: none"> • Animal and Plant cells • Cell Specialisation and differentiation • Meiosis • Microscopy • Stem Cells • Transport in Cells Atomic Structure <ul style="list-style-type: none"> • Atoms, Elements and Compounds • Development of Atomic Model • Relative Electrical Charges and Masses 	<ul style="list-style-type: none"> • eukaryotic cells • ribosomes • prokaryotic cells • plasmids • flagella • xylem • phloem • osmosis states of matter <ul style="list-style-type: none"> • particle theory • dot and cross diagram 	<p>Building on..... Cell Biology is building on: Year 7 Cells</p> <p>Atomic Structure is building on: Year 7 Metals and Non-metals and Year 8 Periodic Table and Elements.</p> <p>Building towards... Cell Biology is building towards the A level unit on Cells</p> <p>Atomic Structure is building towards the A level units on Atomic structure, amount of substance & periods and groups of</p>

		<ul style="list-style-type: none"> • Electronic Structure • The periodic Table • Groups of the Periodic Table. 		periodic table.
Autumn 2	<p>Bonding and Structure (Chemistry)</p> <p>Energy (Physics)</p>	<p>Bonding and Structure</p> <ul style="list-style-type: none"> • Ionic Bonds and Compounds • Covalent Bonds and Compound • Metallic Bonds • Polymers • Allotropes of Carbon <p>Energy</p> <ul style="list-style-type: none"> • Energy Stores and Systems • Changes in Energy • Specific Heat Capacity • Power • Efficiency • Higher Tier - How to increase efficiency 	<p>ionic bonding</p> <ul style="list-style-type: none"> • giant lattice • covalent bonding • simple molecules • polymer • intermolecular forces • giant covalent structure • fullerene • metallic bonding • delocalised electron • alloy • nanoscience 	<p>Building on..... Bonding and Structure is building on: Year 8 Periodic Table and Elements.</p> <p>Energy is building on: Year 7 Speed and Gravity and Year 8 Energy Costs and Energy Transfers.</p> <p>Building towards... Bonding and Structure builds towards the A level unit of Bonding and Oxidation, Reduction and Redox equations.</p> <p>Energy builds towards the A level units on Further mechanics and Thermal Physics.</p>
Spring 1	<p>Organisation (Biology)</p> <p>Electricity (Physics)</p>	<p>Organisation</p> <ul style="list-style-type: none"> • Principles of Organisation • The Digestive System • The Heart and Lungs • Health Issues and Cancer • Plant Tissues and Organs <p>Electricity</p> <ul style="list-style-type: none"> • Circuit Symbols and Diagrams • Charge and Current • Current, Resistance and Potential Difference • Resistors • Series and Parallel Circuits • Domestic Use and Safety • National Grid 	<ul style="list-style-type: none"> • enzymes • carbohydrates • simple sugars • lipids • fatty acids • glycerol • proteins • amino acids • denatured • catalysts • active site • metabolism • carbohydrase • amylase • protease 	<p>Building on..... Organisation is building on: Year 7 Cells, Year 9 Breathing and Year 9 Digestion</p> <p>Building towards... Organisation builds towards the A level unit on Organisms exchange substances with their environment.</p> <p>Electricity builds towards the A level unit on Electricity and Electronics.</p>

<p>Spring 2</p>	<p>Chemical Energy (Chemistry)</p> <p>Infection and Response (Biology)</p>	<p>Chemical Energy</p> <ul style="list-style-type: none"> ● Reactivity of Metals ● Extraction of Metals ● Oxidation and Reduction ● Reactions of Acids and Metals ● Neutralisation ● Soluble Salts ● Electrolysis <p>Infection and Response</p> <ul style="list-style-type: none"> ● Communicable Diseases ● Viral, Bacterial, Fungal and Protist Diseases ● Human Defence Systems ● Vaccination ● Antibiotics ● Discovery and Development of Medication 	<ul style="list-style-type: none"> ● reactivity series ● displacement reaction ● ore ● oxidation/oxidised ● reduction/reduced <p>.placebo</p> <ul style="list-style-type: none"> ● preclinical trials ● clinical trials ● double blind trials ● hybridomas ● monoclonal antibodies ● side effects 	<p>Building on.....</p> <p>Chemical Energy is building on: Year 7 Metals and Non-metals and Year 8 Periodic Table and Elements.</p> <p>Infection and Response is building on: the Year 7 topic of cells and Year Digestion</p> <p>Building towards...</p> <p>Chemical energy builds towards the A level unit on Kinetics.</p> <p>Infection and Response builds towards the A level unit on Organisms respond to changes in their internal and external environment.</p>
<p>Summer 1</p>	<p>Particle Model of Matter (Physics)</p> <p>Energy Changes (Chemistry)</p>	<p>Particle Model of Matter</p> <ul style="list-style-type: none"> ● Density ● Changes of State ● Specific Heat Capacity ● Particle Model and Pressure <p>Energy Changes</p> <ul style="list-style-type: none"> ● Exothermic Reactions ● Endothermic Reactions ● Higher Tier - Oxidation and Reduction in terms of electrons. ● Higher Tier - Electrolysis half equations 		<p>Building on.....</p> <p>Particle Model of Matter is building on: Year 7 Separating mixtures and Particle model and Year 8 Periodic Table and Elements.</p> <p>Energy Changes is building on: Year 9 Chemical Energy and Year 9 Types of Reaction.</p> <p>Building towards...</p> <p>Particle Model of Matter builds towards the A level units on Particles and Radiation & Nuclear Physics</p> <p>Energy Changes builds towards the A level unit on Thermodynamics.</p>

<p>Summer 2</p>	<p>Atomic Structure (Physics)</p> <p>Bioenergetics (Biology)</p>	<p>Atomic Structure</p> <ul style="list-style-type: none"> ● Structure of an Atom ● Radioactive Decay ● Nuclear Equations ● Half-lives ● Radioactive Contamination <p>Bioenergetics</p> <ul style="list-style-type: none"> ● Photosynthesis ● Rate ● Respiration ● Response to Exercise ● Metabolism ● Higher Tier - Factors that affect photosynthesis ● Higher Tier - Blood flow and the breaking down of Lactic acid. 	<p>aerobic respiration</p> <ul style="list-style-type: none"> ● exothermic reaction ● glycogen <p>oxygenated blood</p> <ul style="list-style-type: none"> ● contract ● anaerobic respiration ● lactic acid ● oxygen debt ● metabolism 	<p>Building on.....</p> <p>Atomic Structure is building on: Year 8 Periodic Table and Elements.</p> <p>Bioenergetics is building on: Year 8 Plant Reproduction and Photosynthesis, Year 9 Breathing and Year 9 Respiration.</p> <p>Building towards...</p> <p>Atomic Structure builds towards the A level unit on Particles and Radiation & Nuclear Physics.</p> <p>Bioenergetics builds towards the A level unit on Energy Transfers in and between Organisms.</p>
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