

YEAR 10 CURRICULUM PLAN FOR SCIENCE



TOPIC	KEY LEARNING	ASSESSMENT
Half-term 1 Cell Biology, The Periodic table, Energy	<p>Biology: Describe structures of animal and plants cells, features and functions of specialised cells. Perform calculations involving magnification, actual size and image size. Describe the stages cell cycle, while explaining its importance. State the properties of stem cells, evaluating their uses.</p> <p>Chemistry: To identify atoms, elements, compounds and mixtures. Explore the development of the model of the atom. To identify the relative electrical charges of subatomic particles, the size and mass of atoms and relative atomic mass. To represent the electronic structure of atoms. To describe the development of the periodic table.</p> <p>Physics: Understanding of how energy stores are changed when energy is transferred, Be able to quantify through calculation different types of energy and efficiency. Knowledge of the environmental impacts of methods of generating electricity.</p>	<p>Progress tests:</p> <p>Energy (Physics)</p>
Half-term 2 Cell Biology cont. Organisation, Periodic table cont. Bonding, Electricity	<p>Biology: Knowledge of how substances can move in and out of cells via; diffusion, osmosis and active transport. Explore how structures have adapted to improve the efficiency of material exchange.</p> <p>Explore the organisation of digestive system and role of enzymes in digestion. Knowledge of the structure of the heart, different types of blood vessels linked to their function and composition of blood</p> <p>Chemistry: To Identify the differences between metals and non-metals. Describe and explain the properties and trends in Group 0, Group 1 and Group 7.</p> <p>The three states of matter and State symbols. To describe and explain how bonds are formed and also the structure and properties of Ionic structures, Metallic structures, Covalent structures and the properties of small molecules Polymers.</p> <p>Physics: To identify circuit symbols, understand how current, voltage and resistance behaves in series and parallel circuits. Know how to conduct an investigation into how resistance changes with length of wire and to recognise and explain current/voltage graphs.</p>	<p>Progress tests:</p> <p>Cell Biology (Biology) Atoms & The Periodic table (Chemistry)</p>
Half-term 3 Organisation cont. Bonding cont. Quantative Chem, Electricity cont. Particle model	<p>Biology: Introduction of non-communicable disease by exploring Coronary Heart Disease. Understanding of organisation of the respiratory system, inhalation and exhalation. Describe various plant tissues and how they are adapted for their function focusing on transport of water and glucose.</p> <p>Chemistry: To describe the structure and properties of giant covalent structures –diamond, graphite. To recognise diagrams and descriptions of Graphene and fullerenes.</p> <p>To understand conservation of mass and how to balance chemical equations. To be able to calculate relative formula mass, chemical measurements, moles (HT only) and amounts of substances in equations (HT only)</p> <p>Physics: To know how mains electricity is delivered to our homes safely. Knowledge of kinetic theory of particles and be able to calculate the latent heat required when substances change state, and how the density of different objects can be calculated.</p>	<p>Progress tests:</p> <p>Organisation (Biology) Structure & Bonding (Chemistry) Electricity (Physics)</p>
Half-term 4 Infection & response Quantative Chem cont. Chemical changes Atomic Structure	<p>Biology: Development of understanding of non-communicable disease by exploring cancer tumours and their associated risk factors. Knowledge of disease-causing pathogens with specific examples of disease, their symptoms and treatment. Understanding of how the immune systems prevents pathogens from entering or destroys them. Explore the role of vaccinations and various medicines in treating diseases as well as understanding the process of drug development.</p> <p>Chemistry: To balance equations using moles (HT only), to calculate the Limiting reactants (HT only) and Concentration of solutions. To use the reactivity series to identify if reactions take place and the method for extracting metals. To describe and explain metal extraction by reduction. To identify the reactions of acids with metals, Neutralisation of acids and salt production. Describe how to make salts. To recall and use the pH scale.</p> <p>Physics: To know how the current model of the atom was developed, what Isotopes are and why some materials are radioactive. To know properties of the 3 types of radiation.</p>	<p>Progress tests:</p> <p>Infection & Response (Biology) Quantative Chemistry Particles (Physics)</p>

<p>Half-term 5 Bioenergetics, Chemical changes cont. Atomic Structure</p>	<p>Biology: Explore photosynthesis and how limiting factors affect the rate of reaction. Explain the importance of respiration, comparing aerobic and anaerobic. Describe and explain the changes that occur during exercise. Describe respiration as a part of the metabolism of the body.</p> <p>Chemistry: To describe and explain the process of electrolysis and how we use electrolysis to extract metals. Be able to predict the products of the electrolysis of aqueous solutions.</p> <p>Physics: To understand how radiation can be harmful to our health and to be able to calculate the half-life of radioactive materials using graphical data.</p>	<p>Progress tests: Bioenergetics (Biology) Atomic Structure (Physics)</p>
<p>Half-term 6 Homeostasis, Energy changes, Forces</p>	<p>Biology: Explain why homeostasis is important. Explain the role of the different parts of the nervous system in responding to a stimulus.</p> <p>Chemistry: To distinguish between exothermic and endothermic reactions. Draw, label and use reaction profiles to show the relative energies of the reactants and products, the activation energy and the overall energy change of a reaction. Calculate the energy transferred in chemical reactions using bond energies (HT only).</p> <p>Physics: To be able to identify scalar and vector quantities, to know how speed and acceleration can be calculated and to be able to identify motion from distance-time and velocity-time graphs.</p>	<p>None</p>

NB: Teaching sequence may differ when subjects are delivered by two members of staff