

Chemistry, Biology and Physics Year 10	
Half term 1	<p><u>Atomic structure</u> Modern periodic table and how this was constructed through the work of scientists such as Dimitri Mendeleev.</p> <p><u>Cell biology</u> The structure and function of different cells and how substances are transported in and out of cells through diffusion, osmosis and active transport.</p>
Half term 2	<p><u>Periodic table</u> <u>Bonding and structure</u> <u>Organisation</u></p>
Half term 3	<p><u>Earth's atmosphere</u> How the atmosphere evolved over time and how our current atmosphere has been changed by pollution. How human activities have affected the environment.</p> <p><u>Using Resources</u> Investigate the economics of the Haber process and how fertilisers are made in the laboratory.</p> <p><u>Infection and response</u> plant diseases and plant defence mechanisms.</p>
Half term 4	<p><u>Energy and energy resources</u> Students will learn about how energy can be transferred between energy stores within a closed system. They will use and apply a number of equations to calculate energy values.</p> <p><u>Waves</u> How these waves are used for example how doctors use radio waves in scanners to obtain 3 D images of organs and ultrasonic waves to visualise objects inside the body.</p>
Half term 5	<p><u>Energy and heat transfer</u> Students will develop their understanding about measuring and using energy. Students will learn about how wind turbines and other energy resources that don't burn fuels could enable everyone have access to energy. They will investigate how to work out the energy needed to heat an object.</p> <p><u>Waves(Continued)</u> The electromagnetic spectrum and how these waves transfer energy from a source to an absorber. Students will need to learn and apply the wave equation to calculate speed, wavelength and frequency of electromagnetic waves. Reflection and refraction, plane mirror and how light refracts when it goes from air to glass.</p>
Half term 6	<p><u>Molecules and matter</u> Measurements which can be used to calculate the density of regular and irregular objects. Changes in thermal energy and specific latent heat of fusion using the relevant equations.</p> <p><u>Electricity</u> Setting up and checking up circuits to investigate the factors affecting the resistance of electrical circuits. The power ratings for domestic electrical appliances and the changes in energy store when they are used.</p>
Homework expectations	<p>Students are expected to do least one hour each week which will support students in consolidating learning from lessons. It may be learning definitions, practising an exam style answer or reviewing work that should be improved.</p> <p>Students should use resources such as SAM learning to improve their understanding of the concepts covered in their lessons.</p>
By the time you finish key stage 4 you'll be...	<p>Able to carry out a series of practical investigation tasks to obtain and record results. You should then be able to analyse and interpret these results to make construct a conclusion and make decisions about how to improve the method used. You should now have gained the skills and knowledge to apply you skills in a different contexts and feel confident about studying Science at A level.</p>

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Half term 1	<p><u>Quantitative Chemistry</u> The masses of reactants and products when given a balanced symbol equation. Atom economy and the mass of solute in a solution. Titrations of strong acids and strong alkalis.</p> <p><u>Photosynthesis</u> The conditions needed for photosynthesis and the factors affecting the process. They will carry out practical work to investigate the effect of light intensity on the rate of photosynthesis.</p> <p><u>Human nervous system</u> Reflex action and why reflex actions are important. The function of different parts of the eye.</p>
Half term 2	<p><u>Chemical Changes</u> Ways metals are extracted and the reactions of acids with alkalis, metals and carbonate compounds.</p> <p><u>Electrolysis</u> Process and importance of electrolysis and be able to describe the process of the electrolysis of molten ionic compounds.</p> <p><u>Energy changes</u> Exothermic and endothermic reactions through investigation tasks. Energy changes in the breaking and making of bonds and calculate the overall energy changes.</p> <p><u>Hormones and homeostasis</u> How body temperature is monitored and maintained. The role and function of different hormones and how hormones control the menstrual cycle and ovulation.</p>
Half term 3	<p><u>Rates and equilibrium</u> The factors that affect the speed of chemical reactions such as temperature and concentration. The rate of reactions involving measuring the volume of a gas and change in colour.</p> <p><u>Organic Chemistry</u> Physical properties of different hydrocarbons. The process of polymerisation and write equations to show how polymers are made.</p> <p><u>Magnetism and electromagnetism</u> Generator effect and how this is used in an alternator to generate electricity.</p>
Half term 4	<p><u>Chemical analysis</u> Ionic compounds. Paper chromatography used to separate coloured substances.</p> <p><u>Atomic structure and radioactivity</u> How the atomic model has changed over time due to new experimental evidence. Students will develop their understanding about the uses and properties of alpha, beta and gamma radiation.</p> <p><u>Space and universe</u> The expansion of the universe, red shift.</p> <p><u>Variation and evolution</u> The advantages of sexual and asexual reproduction.</p>
Half term 5	<p><u>Forces and motion</u> Students will learn about what forces do and how we measure forces and their effects. During this unit students will learn and apply equations to calculate forces.</p> <p><u>Molecules and Matter</u> The particle model. The density of regular and irregular objects. Thermal energy and specific latent heat of fusion using the relevant equations.</p>
Homework expectations	<p>Students are expected to do least one hour each week which will support students in consolidating learning from lessons. It may be learning definitions, practising map or graph skill, practising an exam style answer or reviewing work that should be improved.</p>
By the time you finish key stage 4 you'll be...	<p>Able to carry out a series of practical investigation tasks to obtain and record results. You should then be able to analyse and interpret these results to make construct a conclusion and make decisions about how to improve the method used. You should now have gained the skills and knowledge to apply you skills in a different contexts and feel confident about studying Science at A level.</p>