

Combined Science Trilogy Year 10

Half term 1	<p><u>Atomic structure</u> The structure of the atom and how atomic theories developed over time.</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> Students will learn about the chemical and physical properties of some of the main groups in the periodic table such as group 1 and 7. They will also be able to explain the trends in the reactivity of the elements in these groups.</p> <p><u>Bonding and structure</u> Ionic and covalent bonding for a range of compounds. The structure and properties of ionic, covalent and metallic bonded materials.</p> <p><u>Organisation</u> The way our food is digested and how enzymes play a key role in this process. They will also learn about the structure and function of different parts of the circulatory system and breathing systems.</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.</p> <p><u>Using Resources</u> Resources including water and metals as well as the use of finite and renewable resources. A life cycle assessment on products such as paper and plastic.</p> <p><u>Infection and response</u> Microbes and how the body fights infections. Students will investigate the growth of bacteria in the laboratory.</p>
Half term 4	<p><u>Energy and energy resources</u> 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> Waves such as radio and X-rays and their properties. Students will need to know 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> Measuring and using energy. How wind turbines and other energy resources that don't burn fuels could enable everyone have access to energy.</p> <p><u>Waves(Continued)</u> Students will study the electromagnetic spectrum and how these waves transfer energy from a source to an absorber</p>
Half term 6	<p><u>Molecules and matter</u> Use the particle model to explain why a change of state is reversible and affects the properties of a substance.</p> <p><u>Electricity</u> Types of circuits through practical investigation work. 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. 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>

Science: Combined Synergy, Year 11	
Half term 1	<p><u>Acids and alkalis</u> The different ways metals are extracted and the reactions of acids with alkalis, metals and carbonate compounds. Variables that affect the temperature change of a series of reactions in solution.</p> <p><u>Lifestyle and Health</u> Students will study different types of diseases and evaluate the effect of lifestyle factors on our health. The human and financial cost to individuals and the community. The role of hormones and how insulin controls sugar levels in the body.</p>
Half term 2	<p><u>Rates and extent of chemical change</u> Students will learn about the factors that affect the speed of chemical reactions such as temperature and concentration. Rates of reactions involving measuring the volume of a gas and change in colour. The effect of PH on the rate of reaction of amylase enzyme.</p> <p><u>Radiation and risk</u> Students will learn about how the atomic model has changed over time due to new experimental evidence. Understanding about the uses and properties of alpha, beta and gamma radiation.</p> <p><u>Preventing and curing diseases</u> Microbes and how the body fights infections. Students will investigate the growth of bacteria and how this growth can be prevented in the laboratory. The role of the immune system and the use of vaccines in the prevention and treatment of disease.</p>
Half term 3	<p><u>Atoms and ions</u> The process and importance of electrolysis and be able to describe the process of the electrolysis of molten ionic compounds. Identify the presence of oxygen, hydrogen, carbon dioxide and chlorine gas.</p> <p><u>Carbon Chemistry</u> How we extract chemicals from crude oil and describe the trends in the physical properties of different hydrocarbons. The process of polymerisation and write equations to show how polymers are made.</p>
Half term 4	<p><u>Resources of materials</u> The different ways in which metals are extracted. They will also evaluate the uses of renewable and non-renewable resources.</p> <p><u>Earth's Atmosphere</u> How our current atmosphere has been changed by pollution. Students will evaluate how human activities have affected the environment. Climate change and how this has affected the environment.</p> <p><u>Ecosystems and biodiversity</u> Students will learn about the different levels of organisation in an ecosystem including food chains and webs.</p>
Half term 5	<p><u>Ecosystems and biodiversity continued</u> Students will measure the population size of a species in a habitat. They will be able to describe the positive and negative impacts of humans' interactions within ecosystems and explain their impact on biodiversity.</p> <p><u>Energy</u> Energy transfers in a system and investigate ways of reducing unwanted energy transfer.</p>
Homework expectations	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 exam style questions or reviewing work that should be improved.
By the time you finish key stage 4 you'll be...	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 your skills in a different context and feel confident about studying Science at A level.