| Terms | | 1 8 | <u>k</u> 2 | | | | | 3 & 4 | | | 5 & 6 | | | |
|-----------------|--|--|---|--|--|--|---|--|---|--|--|---|---|---|
| Year 7 | Transition Ce | ells & Systems | Matter, Atoms & Elements | Forces | | Plants & Photosynthesis | | re & Impure bstances | | Electricity & Magnetism | Re | eproduction | Acids & Alkalis | Energy Stores & Pathways |
| Assessment | health and safety in the Science laboratory and learn to use a variety of Science equipment including a Bunsen burner th | udents learn about e structure of plant ad animal cells. They arn to prepare slides ad use a microscope. aey also learn about uscles and the eleton. eating a Model Cell | Students learn why solids, liquids and gases behave as they do. They learn to define atoms, elements, compounds and mixtures and are introduced to the Periodic table Investigating Ice Cubes | Students lear represent for calculate resi forces. They about mome pressure. Stu investigate h spring stretch Hooke's Law | rces and pultant helearn ants and fidents awa fees. | tudents learn a photosynthesis a now leaves are dapted to their unction. They lead bout food chair ood webs and interdependence | and sep inc evaluation inc evaluation distribution inc evaluation distribution inc example in example inc example | udents learn al paration technic luding filtration apporation, stillation and romatography. ey also learn alfusion and ssolving excribing method | iques n, bout | Students learn how draw circuit diagra and measure curre and voltage. They learn to define and calculate resistance They learn about static electricity an electromagnets Electricity & | ms related to the rel | udents learn about production in imans including the ructure and function the reproductive gans, fertilisation, estation and birth. | Students learn about acids and alkalis and how to identify their pH using a range of indicators. They learn about neutralisation and making salts pHantastic Paper | Students learn about different energy stores. They learn about heat energy transfers through conduction, convection and radiation. |
| | | | practical | results and d graph | | | for | Separating chniques | | Magnetism end of topic test | | pic test | letter for making red cabbage indicator | investigation |
| Homework | and key words. ar Preparation for Pr | arning of key facts ad key words. eparation for sessments | Learning of key facts and key words. Preparation for assessments | Learning of k and key word Preparation f assessments | ds. a for P | earning of key the second seco | and Pre | arning of key fa d key words. eparation for sessments | | Learning of key fac and key words. Preparation for assessments | an Pr | arning of key facts ad key words. eparation for sessments | Learning of key facts and key words. Preparation for assessments | Learning of key facts and key words. Preparation for assessments |
| Torms | | 1 & 2 | | | I | | 3 8 | Р Л | | | | | 5 & 6 | |
| Terms Year 8 | Nutrition & Digestion | Speed & Motion | Earth & Atmo | sphere | The Periodic | Table | Waves, Ligh | | Gas exc | change & | Chemica | al Reactions | nheritance, | Space Physics |
| | J | • | | | | | , 0 | | Respira | _ | | | Chromosomes & Genes | |
| Assessment | Students will learn about the key nutrients required to maintain a healthy human diet along with the consequences of imbalance in the diet, how tissues and organs are adapted for their function within the digestive system and the importance of bacteria and enzymes in the human digestive system. They will also carry out food tests and how to determine the energy content in food. | able to use the equal speed = distance ÷ and represent a jou on a distance-time Students will investand be able to explain forces being needed cause objects to stratt moving, or to their speed or dire motion, in qualitat terms | the structure of and the different between rock with how they formed. Stude able to recall the properties of orgraph. The string events involved about the different between polyic composites are going on to whom the string of | of the Earth ences types, along were nts will be he key different rock ain the d in the rock I also learn erences mers, d ceramics- ny we use als for applications | Students will about the his development Periodic Table the arrangent elements and properties. So revisit atoms elements and introduced to structure of the including subparticles. The investigate the formetals and reactivity of along with he can be extract. | story and t of the le, including nent of d their tudents will s and d be o the the atom, o atomic ey will he reactions d the metals ow metals cted | Students will about the property both sound a waves and buse diagram represent the transmission through differ objects and to colour and the eye. Sinvestigate the sound | roperties of and light of and light of sea able to see of of light erent explain he function students will the speed of | about t breathi respirat breathi with ex will lead structu these k adapted functio rate of altered | ition and how ing rate is altered ercise. Students irn how the ires involved with key processes are and for their on and how the diffusion can be | use wor equation reaction be able atoms a during combustand their decompalong with of metal oxides a and exoreaction catalysts reaction | d and symbol ns to represent is. Students will to explain how re rearranged themical is. The will study tion, oxidation rmal iosition reactions ith the reactions is and metal ind endothermic thermic is and how s alter chemical is | Students will learn the structure of DNA and now characteristics are inherited. They will study human evolution and the classification system along with completion within and between the species. Students will learn about the reasons behind extinction and why conservation is important | Students will learn the structure of the solar system, how the universe was created and why we have day and night and seasons. Students will study eclipses and the phases on the moon and learn about the importance of scientific developments in relation to our understanding of the scale of the universe and is their life on other planets |
| Assessment | Extended writing task on the stages, adaptations and process of digestion. | e Car velocity investi | gation Earth and Atm assessment | ospnere | The Periodic of topic test | | Speed of sou investigation | า | | ed writing task Irney of oxygen Ile | of topic | test | nheritance, Chromosomes & Genes end of topic test | Multiple choice assessment |
| Homework | Learning of key facts and key words. Preparation for assessments | Learning of key factoring key words. Preparation for assessments | ts and Learning of ke key words. Preparation for assessments | | Learning of k key words. Preparation assessments | for | Learning of I key words. Preparation assessments | for | key wo | ation for | key wor Prepara assessm | ds. | Learning of key facts and key words. Preparation for assessments | Learning of key facts and key words. Preparation for assessments |
| Terms | | 1 & 2 | | | | | 3 | & 4 | | | | | 5 & 6 | |
| Year 9 | Adaptation, interdependence and Competition | Atomic Structure | Molecules and Ma | | ell Biology | | odic Table | Energy Tra Heat | ing | | | Organisation and to Digestive Systen | the Structure and Bonding | Energy Resources |
| Key learning | the importance of communities and factors that affect communities. They will be able to | Students will learn about the history of the atom evidence that support the current model of tatom. They will learn to sub atomic particles | about the properties the states of matte what is meant by | es of similar differe prokar eukary | nts will learn the dities & such a contract of the contract of | about the developme periodic ta will be able | history and ent of the able. They e to link | Students will how energy transferred a infrared radi They will lea reduce the radional structure. | is and ation. rn how t | Students will I the role of chromosomes cells, the impo to of the cell cyc how cells divid | s in ortance le and | Students will be lead how cells are organised into tissuand tissues form organs. They will learn the structure | to explain how atom form ions and that melting and boiling point is dependant of | demands are met and the fuels used to generate electricity. |

SCIENCE IMPLEMENTATION PLAN

| | | | | | | | | | SCILIVE IIVII | LLIVILIVI ATTOM I LAIV |
|------------|---------------------------|---------------------------|---------------------------|-------------------------|-----------------------|-------------------------|------------------------|-----------------------|-----------------------|------------------------|
| | and abundance of | within the atom, their | about internal energy | both animal & plant | to the periodic table | energy transfer, | mitosis. They will be | involved in human | and the forces | how wind, water, the |
| | organisms and describe | charges and how to | and specific latent heat. | cells. Students will be | and explain the trend | especially in the home | able to explain how | digestion and how | between them. | sun and Earth can be |
| | competition in animals | deduce the number of | Students will be able to | able to describe what | in reactivity of the | and how to calculate | differentiation varies | these are adapted. | Students will learn | used to generate |
| | and plants. Students will | each of these particles. | explain how gases | can be seen under | alkali metals and | specific heat capacity. | in animals and plants | They will also learn | about ionic, covalent | electricity and the |
| | be able to describe how | They will learn how to | create pressure and | electron microscopes | halogens. Students | Students will be able | and the use of stem | how the digestive | and metallic | impact of different |
| | animals and plants are | represent the electronic | how pressure changes | and how to carry out | will be able to state | to discuss the ways in | cells | system works, | substances and how | fuels on the |
| | adapted to survive | structure of an atom and | the volume of a gas. | magnification | the properties of the | which homes are | | including the role of | the structure and | environment |
| | | ion and how to explain | Students will be able to | calculations. They will | transition elements | heated | | enzymes, stomach | bonding of | |
| | | separation techniques | complete pressure | be able to explain the | | | | acid and bile | substances is linked | |
| | | | equations | process of osmosis, | | | | | to their properties. | |
| | | | | diffusion and active | | | | | Students will learn | |
| | | | | transport & the | | | | | about nanoparticles | |
| | | | | adaptations of | | | | | and their current and | |
| | | | | organisms for | | | | | potential application | |
| | | | | exchanging materials, | | | | | | |
| | | | | including surface area | | | | | | |
| | | | | to volume calculations | | | | | | |
| Assessment | Distribution and | Atomic Structure end of | Molecules and Matter | Osmosis practical | Extended writing task | Multiple choice | Cell biology and | Extended writing task | Structure and | Multiple choice |
| | abundance practical | unit assessment | end of unit assessment | | explaining the | assessment | Division end of unit | on the process and | bonding end of unit | assessment |
| | | | | | reactivity of group | | assessment | adaptations for | assessment | |
| | | | | | one & group seven | | | digestion | | |
| | | | | | elements | | | | | |
| Homework | Learning of key facts and | Learning of key facts and | Learning of key facts | Learning of key facts | Learning of key facts | Learning of key facts | Learning of key facts | Learning of key facts | Learning of key facts | Learning of key facts |
| | key words. | key words. | and key words. | and key words. | and key words. | and key words. | and key words. | and key words. | and key words. | and key words. |
| | Preparation for | Preparation for | Preparation for | Preparation for | Preparation for | Preparation for | Preparation for | Preparation for | Preparation for | Preparation for |
| | assessments | assessments | assessments | assessments | assessments | assessments | assessments | assessments | assessments | assessments |

Key Stage 4 Biology - Separate Science

| Terms | 1 | & 2 | 3 & | 4 | 5.8 | <u>k</u> 6 |
|--------------|---|--|--|--|---|---|
| Yr10 Units | B4 Organising Animals & Plants B5 Communicable Diseases | B6 Preventing & Treating Disease B7 Non-Communicable Diseases | B8 Photosynthesis B9 Respiration | B10 The Human Nervous System | B11 Hormonal Coordination | B12 Homeostasis in action |
| Key learning | Students will learn about the components of blood, how it flows around the body and the structure and function of the heart and human gas exchange system. They will be able to describe organ systems in a plant and how substances are transported in plants. Students will learn about the process of transpiration and the role of stomata and guard cells Students will also learn about what health is and how pathogens are spread. They will be able to explain how bacteria multiply and how infection can be | Students will learn how the immune system works and how the process of vaccination prevents disease. They will be able to explain the use of antibiotics and painkillers and the stages involved in developing new drugs. Students will learn how monoclonal antibodies are produced and be able to explain how they are used, including evaluating their advantages and disadvantages. Students will learn about non communicable diseases and lifestyle factors, they will learn the difference between a benign and malignant tumour | Students will learn about the factors that affect the rate of photosynthesis and how to represent this process using equations. They will be able to explain how plants use glucose and how humans can both measure and manipulate the rate of photosynthesis. Students will learn about the biochemistry of the process or aerobic and anaerobic respiration and why these processes are so important. They will be able to explain how the body responds to additional demands for energy and what metabolism is, including the role of the liver in this | Students will learn why it is important to control the internal environment and the key elements of control systems. Students will be able state the structure of the nervous system and explain why it is needed. Students will be able to explain how reflexes work and why these are important to the body. Students will also be able to state the structure of the brain and how scientists are able to map the brain along with how the structure of the eye is related to its function and the problems associated with the eye | Students will learn the organs of the endocrine system and the role of the pituitary gland. Students will be able to name key hormones and how they affect the human body. Students will be able to explain how blood glucose level is controlled and the importance of negative feedback loops. Students will learn about the changes that occur at puberty, the control of the menstrual cycle and fertility treatments. Students will also learn about the plant hormones and responses and how plant hormones | Students will learn about how the body maintains eternal conditions including temperature and water levels. Students will be able to describe how waste products are removed from the body and the function of the kidney. Students who able to describe the use of dialysis and kidney transplants alowith the advantages and disadvantages of these treatments. |
| | prevented. Students will be able to name examples of bacterial, viral, fungal disease and those caused by protists. Students will be able to explain the human and plant defence response | and how cancer spreads. They will learn about risk factors for disease and the treatments for cancer | process | | can be used commercially | |
| Assessment | B4 end of unit assessment Microbiology practical | Combined B6 and B7 end of unit assessment | Photosynthesis graphing task and B9 end of unit assessment | B10 The Human Nervous system end of unit assessment | B11 Hormonal Coordination assessment | Extended writing task on homeostasis |
| Homework | GCSE exam questions, learning key facts and formulae, revision for assessments | GCSE exam questions, learning key facts and formulae, revision for assessments | GCSE exam questions, learning key facts and formulae, revision for assessments | GCSE exam questions, learning key facts and formulae, revision for assessments | GCSE exam questions, learning key facts and formulae, revision for assessments | GCSE exam questions, learning key facts and formulae, revision for assessments |
| Yr11 Units | B13 Reproduction | B14 Variation & Evolution | B15 Genetics & Evolution | B17 Organising an Ecosystem B18 Biodiversity & Ecosystems | | |
| Key learning | Students will learn the differences between sexual and asexual reproduction and be able to describe the process of mitosis. Students will be able to state how fungi, plants and malaria parasites reproduce. Students will learn about DNA, its structure and how DNA controls protein synthesis. Students will learn about gene mutations, how inheritance works and how to represent genetic crosses. They will also learn about inherited disorders and how these are screened for | Students will learn about the factors that make individuals different from one another and the process of natural selection and evolution. They will learn about the processes of selective breeding and genetic engineering along with cloning. They will be able to discuss the ethical considerations associated with genetic technologies and the advantages and disadvantages of these techniques | Students will learn about the history of genetics and the theories of evolution. They will be able to discuss why ideas and theories were accepted or rejected and the evidence used to support the theory of evolution. Students will be able to describe fossil records and extinction along with antibiotic resistance. Students will also learn about the principles of the classification system and how these systems have changed with technological developments | Students will learn about feeding relationships and how materials are cycled within the community. They will learn about the water and carbon cycles along with the factor that affect the rate of decomposition. Students will learn about biodiversity and the effects of growth on the human population. They will be able to discuss the impact of human activity on the earth and how pollutants form. They will be able to state the causes and effects of global warming and impact of deforestation and destroying peat bogs. Students will be able to evaluate the effects of environmental change on the distribution of organisms and why it is important to maintain biodiversity. Students will be able to explain the transfer of biomass and create pyramids of biomass. Students will also learn about food security and making food | | |

B15 Genetics & Evolution end of unit

assessment

Assessment

B13 Reproduction end of unit

assessment

B14 Variation & Evolution end of unit

assessment

production more sustainable

choice questions

unit assessment

B17 Organising an Ecosystem multiple

B18 Biodiversity & Ecosystems end of

| SCIENCE IMPLEMENTATION PLA | N |
|----------------------------|---|
|----------------------------|---|

| Homework | GCSE exam questions, learning key facts |
|----------|---|---|---|---|
| | and formulae, revision for assessments |

Key Stage 4 Biology - Combined Science

| | | | Key Stage 4 Biology - Combine | ed Science | | |
|--------------|--|---|---|---|---|---|
| Terms | 1 | & 2 | 3 & | 4 | 5 & | . 6 |
| Yr10 Units | B4 Organising Animals & Plants | B5 Communicable Diseases | B6 Preventing & Treating Disease B7 Non-Communicable Diseases | B8 Photosynthesis | B9 Respiration B10 The Human Nervous System | B11 Hormonal Coordination |
| Key learning | Students will learn about the components of blood, how it flows around the body and the structure and function of the heart and human gas exchange system. They will be able to describe organ systems in a plant and how substances are transported in plants. Students will learn about the process of transpiration and the role of stomata and guard cells | Students will also learn about what health is and how pathogens are spread. They will be able to explain how bacteria multiply and how infection can be prevented. Students will be able to name examples of bacterial, viral, fungal disease and those caused by protists. Students will be able to explain the human defence response | Students will learn how the immune system works and how the process of vaccination prevents disease. They will be able to explain the use of antibiotics and painkillers and the stages involved in developing new drugs. Students will learn about non communicable diseases and lifestyle factors, they will learn the difference between a benign and malignant tumour and how cancer spreads. They will learn about risk factors for disease and the treatments for cancer | Students will learn about the factors that affect the rate of photosynthesis and how to represent this process using equations. They will be able to explain how plants use glucose and how humans can both measure and manipulate the rate of photosynthesis | Students will learn about the biochemistry of the process or aerobic and anaerobic respiration and why these processes are so important. They will be able to explain how the body responds to additional demands for energy and what metabolism is, including the role of the liver in this process Students will learn why it is important to control the internal environment and the key elements of control systems. Students will be able state the structure of the nervous system and explain why it is needed. Students will be able to explain how reflexes work and why these are important to the body | Students will learn the organs of the endocrine system and the role of the pituitary gland. Students will be able to name key hormones and how they affect the human body. Students will be able to explain how blood glucose level is controlled and the importance of negative feedback loops. Students will learn about the changes that occur at puberty, the control of the menstrual cycle and fertility treatments |
| Assessment | B4 end of unit assessment | Extended writing task on preventing infections | Combined B6 and B7 end of unit assessment | Photosynthesis graphing task | B10 The Human Nervous system end of unit assessment | B11 Hormonal Coordination assessment |
| Homework | GCSE exam questions, learning key facts and formulae, revision for assessments | GCSE exam questions, learning key facts and formulae, revision for assessments | GCSE exam questions, learning key facts and formulae, revision for assessments | GCSE exam questions, learning key facts and formulae, revision for assessments | GCSE exam questions, learning key facts and formulae, revision for assessments | GCSE exam questions, learning key facts and formulae, revision for assessments |
| Yr11 Units | B12 Reproduction | B13 Variation & Evolution | B14 Genetics & Evolution | B16 Organising an Ecosystem B17 Biodiversity & Ecosystems | | |
| Key learning | Students will learn the differences between sexual and asexual reproduction and be able to describe the process of mitosis. Students will learn about DNA and how inheritance works. Students will be able to use diagrams to represent genetic crosses. They will also learn about inherited disorders and how these are screened for | Students will learn about the factors that make individuals different from one another and the process of natural selection and evolution. They will learn about the processes of selective breeding and genetic engineering. They will be able to discuss the ethical considerations associated with genetic technologies and the advantages and disadvantages of these techniques | Students will be able to describe evidence for evolution and fossil records along with extinction and antibiotic resistance. Students will also learn about the principles of the classification system and how these systems have changed with technological developments | Students will learn how materials are cycled within the community. They will learn about the water and carbon cycles. Students will learn about biodiversity and the effects of growth on the human population. They will be able to discuss the impact of human activity on the earth and how pollutants form. They will be able to state the causes and effects of global warming and impact of deforestation | | |

B14 Genetics & Evolution end of unit

GCSE exam questions, learning key facts

and formulae, revision for assessments

assessment

B12 Reproduction end of unit

GCSE exam questions, learning key facts

and formulae, revision for assessments

assessment

Assessment

Homework

B13 Variation & Evolution end of unit

GCSE exam questions, learning key facts

and formulae, revision for assessments

assessment

and destroying peat bogs. Students will be able to explain why it is important

B16 Organising an Ecosystem multiple

B17 Biodiversity & Ecosystems end of

GCSE exam questions, learning key facts and formulae, revision for

to maintain biodiversity.

choice questions

unit assessment

assessments

Key Stage 4 Chemistry - Separate Science

| | Rey Stage 4 Chemistry - Separate Science | | | | | | | | |
|--------------|---|---|---|--|---|--|--|--|--|
| Terms | 1 | & 2 | 3 & | 4 | 5 8 | k 6 | | | |
| Yr10 Units | C4 Chemical Calculations | C5 Chemical Changes C6 Electrolysis | C7 Energy Changes | C8 Rates & Equilibrium | C9 Crude Oil & Fuels | C10 Organic Reactions C11 Polymers | | | |
| Key learning | Students will learn what relative atomic mass is and how it is calculated. They will be able to calculate the formula mass of a compound, number of moles and mass in grams of a substance. Students will be able to balance equations, use equations to calculate the masses of reactants and products and balance equations using masses. Students will also be able to calculate chemical yield and atom economy. They will be able to express concentration, carry out a titration and complete associated calculations. Students will learn how to calculate the volume of gases | Students will learn about the reactivity series and to explain displacement reactions using ionic equations. They will learn about oxidation and reduction and the extraction of metals. They will learn about how salts are made and neutralisation reactions. Students will be able to use the pH scale and explain how pH is determined. Students will be able to explain what happens in electrolysis and predict the products of electrolysis, using equations to represent these reactions. They will be able to explain why electrolysis is used and use half equations | Students will learn energy cannot be created or destroyed in a chemical reaction and how to distinguish between endothermic and exothermic reactions. They will be able to describe the uses of energy from endothermic and exothermic reactions and create and interpret reaction profiles. They will be able to define activation energy and complete bond energy calculations. Students will learn about chemical cells, batteries and fuel cells and be able to write half equations for the electrodes in fuel cells | Students will learn what is meant by the rate of reaction and how it is measured. They will be able to calculate the mean rate of reaction and use different methods to collect data on the rate of reaction. Students will be able to describe the factors that affect the rate of reaction, using collision theory. Students will learn about reversible reactions and dynamic equilibrium and how changing conditions affects reversible reactions. | Students will learn about what crude oil is made up of and how it is separated into fractions. They will be able to represent alkanes using chemical and display formulae and how chain length affects the properties of hydrocarbons. Students will learn about combustion reactions and how to test for the products of combustion. They will be able to describe the process of cracking and how alkanes differ from alkenes | Students will learn about the alkenes, alcohols, carboxylic and esters and how to represent these structures using displayed structural formulae. The students will learn about combustion and addition reactions of alkenes and the reactions and uses of alcohols. Students will learn how to recognise and represent polymers. Students will learn the principles of condensation polymerisation and how polyesters are formed. They will also be able to describe natural polymers and the structure on DNA | | | |
| Assessment | C4 Chemical Calculations practice questions | Writing a method to explain how to prepare a pure dry sample of a hydrated salt C5 Chemical Changes & C6 Electrolysis end of unit assessment | C7 Energy changes end of unit assessment | Rates of reaction practical Multiple choice questions | C9 Crude oil and Fuels end of unit assessment | C10 Organic Reactions and C11 Polymers combined end of unit assessment | | | |
| Homework | GCSE exam questions, learning key facts and formulae, revision for assessments | GCSE exam questions, learning key facts and formulae, revision for assessments | GCSE exam questions, learning key facts and formulae, revision for assessments | GCSE exam questions, learning key facts and formulae, revision for assessments | GCSE exam questions, learning key facts and formulae, revision for assessments | GCSE exam questions, learning key facts and formulae, revision for assessments | | | |
| Yr11 Units | C12 Chemical Analysis | C13 The Earth's Atmosphere | C14 The Earth's Resources | C15 Using our Resources | | | | | |
| Key learning | Students will learn what pure and impure substance are and how melting point data and chromatography can be used to distinguish these substances from one another. They will learn what a formulation is and how to determine R _f values. They will be able to describe the positive test for gases and both positive | Students will learn how the theory of our atmosphere developed and the evidence used to support these theories. They will learn the key changes that have occurred in the atmosphere over time. Students will be able to describe global warming, the greenhouse effect and the impact of environmental pollutants | Students will be able to distinguish between finite and renewable resources and explain the process of water treatment. They will also learn how metals are extracted from their ores and how to carry out life cycle assessments. Students will be able to explain the importance of reusing and recycling materials | Students will learn about rusting and useful alloys along with the properties of polymers, glass, ceramics and composites. They will learn about the Haber process and how fertilisers can be made, both in the lab and on an industrial scale | | | | | |

C13 The Earth's Atmosphere and C14 The

Earth's Resources combined end of unit

GCSE exam questions, learning key facts

and formulae, revision for assessments

assessment

C15 Using our Resources end of unit

GCSE exam questions, learning key

facts and formulae, revision for

assessment

assessments

and negative ions. Students will learn about how to interpret results from

Identifying an unknown substance

GCSE exam questions, learning key facts

and formulae, revision for assessments

Multiple choice questions on C12

Atmosphere

Chemical Analysis and C12 The Earth's

GCSE exam questions, learning key facts

and formulae, revision for assessments

instrumental analysis

Assessment

Homework

Key Stage 4 Chemistry - Combined Science

| | | | , , | | | |
|--------------|--|--|---|---|--------------------------------------|---------------------------------------|
| Terms | 1 | & 2 | 3 & | 4 | 5 8 | & 6 |
| Yr10 Units | C4 Chemical Calculations | C5 Chemical Changes | C5 Chemical Changes | C6 Electrolysis | C7 Energy Changes | C8 Rates & Equilibrium |
| Key learning | Students will learn what relative atomic | Students will learn about the reactivity | They will learn about how salts are made | Students will be able to explain what | Students will learn energy cannot be | Students will learn what is meant by |
| | mass is and how it is calculated. They | series and to explain displacement | and neutralisation reactions. Students will | happens in electrolysis and predict the | created or destroyed in a chemical | the rate of reaction and how it is |
| | will be able to calculate the formula | reactions using ionic equations. They will | be able to use the pH scale and explain | products of electrolysis, using equations | reaction and how to distinguish | measured. They will be able to |
| | mass of a compound, number of moles | learn about oxidation and reduction and | how pH is determined | to represent these reactions. They will | between endothermic and | calculate the mean rate of reaction |
| | and mass in grams of a substance. | the extraction of metals. | | be able to explain why electrolysis is | exothermic reactions. They will be | and use different methods to collect |
| | Students will be able to balance | | | used and use half equations | able to describe the uses of energy | data on the rate of reaction. |
| | equations, use equations to calculate | | | | from endothermic and exothermic | Students will be able to describe the |
| | the masses of reactants and products | | | | reactions and create and interpret | factors that affect the rate of |
| | and balance equations using masses. | | | | reaction profiles. They will be able | reaction, using collision theory. |
| | They will also learn how to express | | | | to define activation energy and | Students will learn about reversible |
| | concentration | | | | complete bond energy calculations | reactions and dynamic equilibrium |
| | | | | | | and how changing conditions affects |
| | | | | | | reversible reactions |
| Assessment | C4 Chemical Calculations practice | Writing a method to explain how to | C5 Chemical Changes & | | C7 Energy changes end of unit | Rates of reaction practical |
| | questions | prepare a pure dry sample of a hydrated | C6 Electrolysis end of unit assessment | | assessment | |
| | | salt | | | | Multiple choice questions |
| Homework | GCSE exam questions, learning key facts | GCSE exam questions, learning key facts | GCSE exam questions, learning key facts | GCSE exam questions, learning key facts | GCSE exam questions, learning key | GCSE exam questions, learning key |
| | and formulae, revision for assessments | and formulae, revision for assessments | and formulae, revision for assessments | and formulae, revision for assessments | facts and formulae, revision for | facts and formulae, revision for |
| | | | | | assessments | assessments |
| | | | | | | |
| Terms | | & 2 | 3 & | | | |
| Yr11 Units | C9 Crude Oil & Fuels | C10 Chemical Analysis | C11 The Earth's Atmosphere | C12 The Earth's Resources | | |
| Key learning | Students will learn about what crude oil | Students will learn what pure and impure | Students will learn how the theory of our | Students will be able to distinguish | | |
| | is made up of and how it is separated | substance are and how melting point data | atmosphere developed and the evidence | between finite and renewable resources | | |
| | into fractions. They will be able to | and chromatography can be used to | used to support these theories. They will | and explain the process of water | | |
| | represent alkanes using chemical and | distinguish these substances from one | learn the key changes that have occurred | treatment. They will also learn how | | |
| | display formulae and how chain length | another. They will learn what a | in the atmosphere over time. Students will | metals are extracted from their ores | | |
| | affects the properties of hydrocarbons. | formulation is and how to determine R _f | be able to describe global warming, the | and how to carry out life cycle | | |
| | Students will learn about combustion | values. They will be able to describe the | greenhouse effect and the impact of | assessments. Students will be able to | | |
| | | | | | | |

explain the importance of reusing and

C11 The Earth's Atmosphere & C12 the

GCSE exam questions, learning key facts

and formulae, revision for assessments

Earth's resources end of unit

recycling materials

assessment

environmental pollutants

Extended writing task

GCSE exam questions, learning key facts

and formulae, revision for assessments

positive test for gases

questions

C10 Chemical Analysis multiple choice

GCSE exam questions, learning key facts

and formulae, revision for assessments

reactions and how to test for the products of combustion. They will be

C9 Crude oil and Fuels end of unit

assessment

Assessment

Homework

able to describe the process of cracking and how alkanes differ from alkenes

GCSE exam questions, learning key facts

and formulae, revision for assessments

Key Stage 4 Physics - Separate Science

| T | 4 | | | | | |
|--------------|---|---|--|---|------------------------------------|--------------------------------------|
| Terms | 1 | 2 | 3 | 4 | 5 | ь |
| Yr10 Units | P1 Conservation and Dissipation of | P4 Electric Circuits | P7 Radioactivity | P8 Forces in Balance | P9 Forces in Motion | P10 Forces and Motion |
| | Energy | P5 Electricity at Home | | | | |
| Key learning | Students will learn how energy is stored | Students will learn how to calculate the | Students will learn about the structure of | Students will learn the difference | Students will learn the difference | Students will learn how to |
| | and transferred. They will learn how to | charge flow in an electric circuit. They will | the atom and sub-atomic particles. They | between a scalar and a vector quantity. | between speed and velocity and | investigate the relationship between |
| | calculate the energy stored in a moving | learn how to calculate the resistance and | will learn how an unstable nucleus | They will learn how to find the resultant | what we mean by acceleration. They | force, mass and acceleration. They |
| | object or in an object when it is lifted or | potential difference in circuits. | changes when it emits radiation and why | of two forces and how to resolve a force | will learn to draw and interpret | will learn what is meant by terminal |
| | stretched. | Students will learn about mains electricity | the radiation it emits is harmful. | into perpendicular components. | distance-time and velocity-time | velocity and the difference between |
| | | and how to calculate the power of an | Students will learn about nuclear fission | Students will learn about moments and | graphs. | mass and weight. |
| | | appliance | and nuclear fusion | how to find the centre of mass of an | | Students will learn about the |
| | | | | object | | conservation of momentum and |
| | | | | | | investigate how a spring behaves |
| | | | | | | when it is stretched |
| Assessment | P1 end of topic assessment | Resistance of a wire practical P4 end of | P7 end of topic assessment | P8 end of topic assessment | Hooke's Law practical | Paper 1 PPE covering P1-P7 |
| | | topic assessment | | | | P10 end of topic assessment |
| Homework | GCSE exam questions, learning key facts | GCSE exam questions, learning key facts | GCSE exam questions, learning key facts | GCSE exam questions, learning key facts | GCSE exam questions, learning key | GCSE exam questions, learning key |
| | and formulae, revision for assessments | and formulae, revision for assessments | and formulae, revision for assessments | and formulae, revision for assessments | facts and formulae, revision for | facts and formulae, revision for |
| | | | | | assessments | assessments |
| | | | | | | |
| Yr11 Units | P11 Forces and Pressure | P13 Electromagnetic Waves | P14 Light | P16 Space | | |
| | P12 Waves Properties | | P15 Electromagnetism | | | |
| Key learning | Students will learn about pressure on | Students will learn about the | Students will learn about the reflection | Students will learn about the formation | | |
| | surfaces and pressure in fluids. | electromagnetic spectrum. They will learn | and refraction of light and how lenses can | of the Solar System and the life history | | |
| | Students will learn about transverse and | how these waves are used in | be used to form images. | of a star. | | |
| | longitudinal waves and how to describe | communications and how they are used to | Students will learn about magnetism and | They will learn about the beginning and | | |
| | them. They will learn about sound | form images. | electromagnetic fields. They will learn | the future of the Universe. | | |
| | | | | | | |

about the motor effect, the generator

GCSE exam questions, learning key facts

and formulae, revision for assessments

GCSE exam questions, learning key facts

and formulae, revision for assessments

effect and transformers.

P15 end of topic assessment

Absorption and Emission of Infra-red

GCSE exam questions, learning key facts

and formulae, revision for assessments

practical

waves, ultrasound and seismic waves.

GCSE exam questions, learning key facts

and formulae, revision for assessments

P12 end of topic assessment

Assessment

Homework

Key Stage 4 Physics - Combined Science

| Terms | 1 | 2 | 3 | 4 | 5 | 6 |
|--------------|---|---|--|--|---|---|
| Yr10 Units | P1 Conservation and Dissipation of | P4 Electric Circuits | P4 Electric Circuits | P7 Radioactivity | P8 Forces in Balance | P9 Motion |
| | Energy | | P5 Electricity at Home | | | |
| Key learning | Students will learn how energy is stored and transferred. They will learn how to calculate the energy stored in a moving object or in an object when it is lifted or stretched. | Students will learn how to calculate the charge flow in an electric circuit. They will learn how to calculate the resistance and potential difference in circuits. They will complete required practicals investigating resistance and different components | Students will learn about mains electricity and how to calculate the power of an appliance | Students will learn about the structure of the atom and sub-atomic particles. They will learn how an unstable nucleus changes when it emits radiation and why the radiation it emits is harmful. | Students will learn the difference between a scalar and a vector quantity. They will learn how to find the resultant of two forces and how to resolve a force into perpendicular components. Students will learn how to find the centre of mass of an object | Students will learn the difference between speed and velocity and what we mean by acceleration. They will learn to draw and interpret distance-time and velocity-time graphs. |
| Assessment | P1 end of topic assessment | Resistance of a wire practical | P4 end of topic assessment | P7 end of topic assessment | P8 end of topic assessment | Paper 1 PPE covering topics P1-P7 |
| Homework | GCSE exam questions, learning key facts and formulae, revision for assessments | GCSE exam questions, learning key facts and formulae, revision for assessments | GCSE exam questions, learning key facts and formulae, revision for assessments | GCSE exam questions, learning key facts and formulae, revision for assessments | GCSE exam questions, learning key facts and formulae, revision for assessments | GCSE exam questions, learning key facts and formulae, revision for assessments |
| | | | | | | |
| Yr11 Units | P10 Forces and Motion | P12 Waves Properties | P13 Electromagnetic Waves | P15 Electromagnetism | | |
| Key learning | Students will learn how to investigate | Students will learn about transverse and | Students will learn about the | Students will learn about magnetism | | |
| | the relationship between force, mass | longitudinal waves and how to describe | electromagnetic spectrum. They will learn | and electromagnetic fields. They will | | |
| | and acceleration. They will learn what is | them. They will learn about sound waves | how these waves are used in | learn about the motor effect and the | | |
| | meant by terminal velocity and the | and ultrasound. | communications and how they are used to | electric motor. | | |
| | difference between mass and weight. | | form images. | | | |

P15 end of topic assessment

GCSE exam questions, learning key facts

and formulae, revision for assessments

P13 end of topic assessment

GCSE exam questions, learning key facts

and formulae, revision for assessments

Students will investigate how a spring

GCSE exam questions, learning key facts

and formulae, revision for assessments

P12 end of topic assessment

GCSE exam questions, learning key facts

and formulae, revision for assessments

behaves when it is stretched

P10 end of topic assessment

Assessment

Homework