

Science Year 7 Curriculum Plan

7	Autumn / Spring	Spring / Summer
PRIOR LEARNING	Beginning to be a scientist: Plan and conduct investigations, control variables, take accurate measurements, record complex data, use results for predictions. Energy 1: Energy transfers and stores; elastic stores energy. Machines increase force. Thermal transfer by conduction and radiation. Organisms 1: Skeletons support/protect, vertebrates have backbones, body systems have specific functions (circulatory, skeletal, digestive). Matter 1: Classify materials, observe state changes, group by properties, separate mixtures, understand reversibility. Forces 1: Compare movement, identify contact/non-contact forces, explore gravity as a pulling force, explore resistance, amplify force with tools.	Genes 1: Compare life cycles, plant/animal reproduction, human development. Evolution and adaptations. Reactions 1: Identify non-reversible changes like burning and acid reactions. Waves 1: Vibrations make sound, vibration strength affects volume. Light travelling straight explains seeing and shadows. Ecosystems 1: Group living things. Explore adaptations. Build and interpret food chains.
KNOWING WHAT...	Beginning to be a scientist: Lab safety, identify equipment, microscope parts, hazard symbols. Energy 1: The unit for energy; the law of conservation of energy; different stores of energy advantages and disadvantages of generating electricity through burning fossil fuels and through renewable sources. Organisms 1: Identify and describe main cell functions. Types of cells (prokaryote/eukaryote). Cell vs. tissue vs. organ vs. organ system (basic functions). Matter 1: Particle motion explains material properties. Temperature changes energy in particles. Pure substances change state at fixed points, mixtures separated by physical differences. Forces 1: Forces are pushes or pulls (measured in Newtons). Mass vs. weight (kg vs. Newtons).	Genes 1: Variation within species (inherited, environmental, combined). Variation helps avoid extinction. Reproductive organs and functions. Menstrual cycle and pregnancy. Foetus dependence on mother. Reactions 1: Metals vs. non-metals properties. Chemical rearrangements: combustion, thermal decomposition, oxidation, displacement. Acids/alkalis and neutralisation. pH scale and indicators. Acids with metals/alkalis reactions. Waves 1: waves transfer energy, not matter. Label wave types. Sound: vibrations and pitch. Waves reflect, refract, transmit, absorb. Light spectrum, both visible and invisible. Ecosystems 1: Producers, consumers, decomposers in food webs. Toxin accumulation in food chains. Insect role in fruit production. Wind vs. insect pollinated plants. Seed dispersal strategies.
KNOWING HOW...	Beginning to be a scientist: Bunsen safety, risk assessment, microscopes, variables, data, math. Energy 1: Energy transfer diagrams; meter reading and energy bills Organisms 1: Microscope-aided cell observation, magnification calculations. Matter 1: Separation techniques, particle models. Forces 1: Speed calculations, distance-time graphs, motion experiments, force diagrams, weight formula.	Genes 1: Graphs for variation (continuous/discontinuous), gestation/menstrual timelines. Reactions 1: Word equations, mass change data, hazard awareness, pH measurements with indicators. Waves 1: Models explaining reflection and refraction (ray diagrams). Ecosystems 1: Population changes in food webs, predicting predator/prey dynamics, evaluating seed dispersal methods
ASSESSMENT	Beginning to be a scientist: Bunsen burner licence awarded upon successful independent use. Energy 1: Energy (measured in joules) is conserved, transferred between stores, and can come from renewable or non-renewable resources with different advantages and disadvantages. Organisms 1: Animal and plant cells, magnification calculations, how to prepare and view a microscope slide. Matter 1: Separation techniques, particle models. Forces 1: Speed calculations, distance-time graphs, experiments, force diagrams, weight formula. End of block assessment: An end of block assessment in the form of a traditional 1-hour exam paper will be undertaken upon completion of the first Biology, Chemistry and Physics units outlined above. This assessment will cover key concepts encountered over all of these topics.	Genes 1: Graphs for variation (continuous/discontinuous), gestation/menstrual timelines. Reactions 1: Word equations, mass change data, hazard awareness, pH measurements with indicators. Waves 1: Models explaining reflection and refraction (ray diagrams). Ecosystems 1: Population changes in food webs, predicting predator/prey dynamics, evaluating seed dispersal methods. End of block assessment: An end of block assessment in the form of a traditional 1-hour exam paper will be undertaken upon completion of the first Biology, Chemistry and Physics units outlined above. This assessment will cover key concepts encountered over all of these topics.
Links	BBC Bitesize https://www.bbc.co.uk/bitesize ; Oak National Academy https://www.thenational.academy ; Seneca Learning https://senecalearning.com ; BioNinja https://ib.bioninja.com.au ; National Geographic Kids https://www.natgeokids.com/uk ; Amoeba Sisters https://www.youtube.com/@AmoebaSisters ; FuseSchool https://www.youtube.com/@FuseSchool ; Chemguide https://www.chemguide.co.uk ; RSC Periodic Table https://www.rsc.org/periodic-table ; Physics Online https://www.youtube.com/@PhysicsOnline ; The Physics Classroom https://www.physicsclassroom.com ; PhET Simulations https://phet.colorado.edu ; NASA Space Place https://spaceplace.nasa.gov ; British Geological Survey https://www.bgs.ac.uk ; Malmesbury Science https://www.youtube.com/@malmesburyscience ; Science Shorts https://www.youtube.com/@ScienceShorts ; Maths Genie https://www.mathsgenie.co.uk	

Science Year 8 Curriculum Plan

8		Autumn / Spring	Spring / Summer
PRIOR LEARNING		Organisms 2: Cell functions, unicellular organisms, tissue/organ/system basics. animals and plants are adapted to suit their environment; functions of different parts of flowering plants. Energy 2: The unit for energy; the law of conservation of energy; different stores of energy advantages and disadvantages of generating electricity through burning fossil fuels and through renewable sources. Matter 2: Particle model explains material properties and state changes. Pure substances vs. mixtures, separation methods. Genes 2: Variation (inherited, environmental, combined) helps survival. Reproductive organs, cycles, foetal dependence.	Reactions 2: Word equations, mass change, hazard awareness, pH with indicator. Forces 2: push/pull forces, measured in Newtons. Mass vs. weight (kg vs. Newtons). Ecosystems 2: food chains/webs, habitats, adaptation, interdependence, and how environmental changes Earth: Movement of planets around the Sun in the solar system, the Moon's movement relative to Earth, the spherical nature of the Sun, Earth, and Moon. The cause of day and night. Identify rocks from appearance and simple physical properties. Simple fossil formation. Soils are made from rocks and organic matter; uses of everyday materials, including metals, wood and plastic;
KNOWING WHAT...		Organisms 2: Gas exchange, effect of smoking on the lungs, functions of digestive organs, role enzymes & bacteria in digestion. Energy 2: equation for work done to different situations; methods of heat transfer; effective insulators Matter 2: Identifying elements, periodic table layout and trends, naming salts. Genes 2: Theory of evolution by natural selection. Causes of extinction.	Reactions 2: exothermic and endothermic reactions. The role of catalysts. Naming products formed during oxidation reactions. Forces 2: Force identification, Hooke's Law, pressure. Ecosystems 2: Aerobic and anaerobic respiration. Leaf structure and photosynthesis. Earth: characteristics of each layer of the Earth; earthquakes, volcanic eruptions and mountain formation at tectonic plate boundaries; rock cycle; the differences between the Sun, other stars and galaxies; implications of the Earth being tilted on its axis; phases of the moon; composition of the atmosphere; greenhouse gases; global warming; carbon cycle; Earth's resources; extraction of metals; recycling.
KNOWING HOW...		Organisms 2: evaluate a model of the breathing system. Calculate percentage change in breathing rate. Energy 2: Unit conversion and substitution into a formula. Matter 2: Identify atoms, molecules, elements, compounds and mixtures from particle diagrams. Use knowledge of the periodic table and a table of data to determine which group an element is from. Genes 2 (Evolution and inheritance): Use genetic diagrams to predict the probability of offspring inheriting a particular characteristic.	Reactions 2: Interpret energy-level diagrams. Writing (balanced) symbol equations. Forces 2: Calculate pressure. Calculate resultant forces. Plot a straight-line graph and calculate the gradient. Rearrange simple mathematical formulae. Ecosystems 2: Use chemical formulae to represent photosynthesis, aerobic and anaerobic respiration. Suggest improvements to an investigation on fermentation. Earth: Translating diagrammatical information into text; Expressing opinions supported by evidence; Interpreting graphs; Interrogating sources of evidence and considering bias.
ASSESSMENT		Organisms 2 and ecosystems 2: gas exchange; digestive enzymes and bacteria in digestion; aerobic and anaerobic respiration. Photosynthesis. Energy 2: Recall the calculation for work done; Calculate the work done; Describe a method of heat transfer; Explain why an object is an effective insulator Matter 2: particle diagrams; naming compounds from chemical formulae; data interpretation; polymers Forces 2: pressure calculations; Hooke's law investigation; upthrust. End of block assessment: An end of block assessment in the form of a traditional 1-hour exam paper will be undertaken upon completion of the first Biology, Chemistry and Physics units outlined above. This assessment will cover key concepts encountered over all of these topics.	Genes 2: extinction; genetic cross diagrams; natural selection. Reactions 2: catalysts; thermal decomposition; chemical equations. Earth: Rocks and the rock cycle; The solar system and seasons; Composition of atmosphere; identifying stages in the carbon cycle; interpreting text and data to form a conclusion. End of block assessment: An end of block assessment in the form of a traditional 1-hour exam paper will be undertaken upon completion of the first Biology, Chemistry and Physics units outlined above. This assessment will cover key concepts encountered over all of these topics.
Links		BBC Bitesize https://www.bbc.co.uk/bitesize ; Oak National Academy https://www.thenational.academy ; Seneca Learning https://senecalearning.com ; BioNinja https://ib.bioninja.com.au ; National Geographic Kids https://www.natgeokids.com/uk ; Amoeba Sisters https://www.youtube.com/@AmoebaSisters ; Chemguide https://www.chemguide.co.uk ; FuseSchool https://www.youtube.com/@FuseSchool ; RSC Periodic Table https://www.rsc.org/periodic-table ; Physics Online https://www.youtube.com/@PhysicsOnline ; The Physics Classroom https://www.physicsclassroom.com ; PhET Simulations https://phet.colorado.edu ; NASA Space Place https://spaceplace.nasa.gov ; British Geological Survey https://www.bgs.ac.uk ; Malmesbury Science https://www.youtube.com/@malmesburyscience ; Science Shorts https://www.youtube.com/@ScienceShorts ; Maths Genie https://www.mathsgenie.co.uk	

Science Year 9 Curriculum Plan

9	Autumn / Spring			Spring / Summer		
PRIOR LEARNING	The small stuff: Properties of solids, liquids, and gases. State changes, including melting, freezing, condensation, and evaporation. Watt is power?: different forms of energy, energy content in food, the cost of energy for homes. Energy as work, heating and cooling, and evaluating different energy resources. The stuff of life: functions and structural differences in plant and animal cells. Diffusion, structural adaptations in unicellular organisms, and hierarchical organisation in multicellular organisms.			All together now: Atoms can join together during reactions to form molecules and compounds. Different atom arrangements lead to distinct physical and chemical properties. Shocking Stuff!: Associate lamp brightness or buzzer volume with the number and voltage of cells in a circuit. Use recognised symbols when depicting a simple circuit in a diagram. How my body works: names and functions of major organs in plants and animals. Common life processes: movement, growth, reproduction, and nutrition. The importance of a varied diet for health and energy.		
KNOWING WHAT...	The small stuff: Atoms, elements, compounds and mixtures. Atomic structure, separation techniques, history of the atom, electronic structure, isotopes, periodic table development, reactivity patterns, and properties of transition metals. Watt is power: Energy stores, work done, power, conservation, dissipation, efficiency, and national/global energy resources. Specific heat capacity. The stuff of life: cells, including eukaryotic vs. prokaryotic cells, specialised cells, microscopy, cell differentiation, stem cells, the cell cycle, and mitosis. Two practical activities: microscopy and osmosis.			All together now: Chemical bonding. Ionic bonding diagrams, properties of ionic compounds. Covalent dot and cross diagrams, properties of simple and giant covalent substances, structure of diamond, graphite, fullerenes, polymers and alloys. Metallic bonding. Changes of state. Shocking Stuff!: Electric charge, circuits, and power covering circuit symbols, current, potential difference, resistance, properties in series and parallel circuits. The UK mains plug and national grid. How my body works: organism organisation, plant and animal tissues, organs, and systems, the heart, blood vessels, lifestyle impact on health, digestive system, enzymes, circulatory system, blood vessels, heart, and plant transport.		
KNOWING HOW...	The small stuff: Using filtration, evaporation, distillation and chromatography to separate mixtures. Record observations for the reactions of Group 1 and Group 7 elements. Writing methods for separation techniques, using standard form, relating properties to structure, interpreting practical observations and extracting data from tables/graphs. Watt is power?: calculate elastic potential and/or kinetic energy of a given object. Determine specific heat capacity of one or more materials. Investigate materials as effective insulators. Using and rearranging equations, using prefixes, identifying units of measurement, evaluating energy resources and explaining trends in data. The stuff of life: Prepare microscope slides of animal and plant cells and view them using a light microscope. Investigate osmosis through plant tissue. Writing methods and identifying variables. Ethical debate on the use of stem cells.			All together now: Ionic and covalent reactions. Investigating ionic compounds. Properties of alloys. Changes in states of matter. The use of 2D and 3D diagrams to represent atoms, balancing equations, making predictions and using state symbols. Shocking Stuff!: Using circuits diagrams to create functioning series and parallel circuits. Draw circuit diagrams from images of electric circuits. Use a range of mathematical formulae to calculate and explain energy transfers in electrical circuits, including efficiency calculations. Produce a full scientific investigation into a factor that affects resistance in a wire, including a method, identifying variables, collection and analysis of data, plotting a line graph from results and using these to form a valid conclusion. How my body works: Tests for protein, lipids, glucose and carbohydrates. Investigate the effect of pH on enzymes. Size and scale, calculating rates. Evaluating risks of blood products and/or treatments of CHD.		
ASSESSMENT	The small stuff: atomic structure; periodic table; symbols equations; alkali metals Watt is power?: the Law of Conservation of Energy; SI units; energy calculations; friction and heat dissipation. The stuff of life: cell organelles; magnification calculations; osmosis investigation; diffusion.			All together now: writing formulae of compounds; dot and cross diagrams of simple covalent molecules; ionic bonds; allotropes of carbon. Shocking Stuff!: UK mains plug; drawing circuits; Ohm's law investigation; electricity calculations. How my body works: Enzymes; circulatory system; using data to evaluate transplants.		
Links	The Small Stuff Bitesize: https://www.bbc.co.uk/bitesize/examspecs/z8xtmn6 PMT: https://www.physicsandmathstutor.com/chemistry-revision/gcse-aqa/atomic-structure-and-periodic-table	Watt is power?: Bitesize: https://www.bbc.co.uk/bitesize/subjects/zpm6fg8 PMT: https://www.physicsandmathstutor.com/physics-revision/gcse-aqa/energy/	The Stuff of life Bitesize: https://www.bbc.co.uk/bitesize/topics/z2s8v9q PMT: https://www.physicsandmathstutor.com/biology-revision/gcse-aqa/cell-biology/	All together now Bitesize: https://www.bbc.co.uk/bitesize/examspecs/z8xtmn6 PMT: https://www.physicsandmathstutor.com/chemistry-revision/gcse-aqa/bonding-structure-properties-of-matter/	Shocking Stuff! Bitesize: https://www.bbc.co.uk/bitesize/subjects/zpm6fg8 PMT: https://www.physicsandmathstutor.com/physics-revision/gcse-aqa/electricity/	How my body works Bitesize: https://www.bbc.co.uk/bitesize/examspecs/zpgcbk7 PMT: https://www.physicsandmathstutor.com/biology-revision/gcse-aqa/organisation/

Science Year 10 Curriculum Plan

10	Autumn Term	Spring Term	Summer Term
PRIOR LEARNING	Particle model of matter: arrangement of particles in the 3 states of matter; changes of state; density. Chemical Changes: reactants and products; conservation of mass; types of reaction. Infection & response: organisms, body systems (respiration), cell biology, and organisation. Quantitative Chemistry: symbolising elements/compounds, mass conservation, solubility, hazard identification, acid-base properties, and neutralisation reactions.	Atomic Structure: atomic structure, subatomic particles, and their links to health and lifestyle. Energy Changes: identification of chemical changes, temperature measurement, equipment usage, and differentiating exothermic/endothermic reactions. Forces: Deepens understanding of force direction, effects of various forces, calculations involving speed, weight, units, and distance-time graphs. Bioenergetics: photosynthesis; anaerobic & aerobic respiration	Atomic structure and the periodic table Properties of solids, liquids, and gases. State changes, including melting, freezing, condensation, and evaporation Energy different forms of energy, energy content in food, the cost of energy for homes. Energy as work, heating and cooling, and evaluating different energy resources Cell Biology functions and structural differences in plant and animal cells. Diffusion, structural adaptations in unicellular organisms, and hierarchical organisation in multicellular organisms Bonding, structure, and the properties of matter Atoms can join together during reactions to form molecules and compounds. Different atom arrangements lead to distinct physical and chemical properties. Electricity Associate lamp brightness or buzzer volume with the number and voltage of cells in a circuit. Use recognised symbols when depicting a simple circuit in a diagram. Organisation names and functions of major organs in plants and animals. Common life processes: movement, growth, reproduction, and nutrition. The importance of a varied diet for health and energy
KNOWING WHAT...	Particle model of matter the particle model, changes of state, density, temperature changes and specific heat capacity. This unit includes one required practical activity: density. Chemical changes: How metal oxides are produced. The reactivity series, extraction of metals and the process of electrolysis. REDOX reactions. Reactions of acids, including naming salts produced. Strong and weak acids Infection & response: Covers four major pathogens, the body's first line defences, how microbes make us ill and viruses damage cells, the role of white blood cells, how vaccines prevent disease, the importance of antibiotics and the impact of resistance, and the main steps in developing and testing a new drug. Quantitative Chemistry: the law of conservation of mass, the concepts of the mole and concentration.	Atomic Structure: the history of atomic structure, explores types of radioactive emissions, contamination, and irradiation. Energy Changes: exothermic/endothermic reactions, their uses, activation energy, reaction profiles, and energy calculations. Forces: explores contact/non-contact forces, Newton's Laws of Motion, and factors affecting a car's stopping distance Bioenergetics The role of photosynthesis and plant transport. The lessons in this unit cover the structure of the plant and leaf, photosynthesis, transpiration, and translocation, as well as plant diseases. This unit includes one required practical activity: photosynthesis	Atomic structure and the periodic table Atoms & elements, separation techniques, history of the atom, electronic structure, isotopes, development of the periodic table, patterns of reactivity and properties and transition metals. Energy Stores and systems, work done and power, conservation and dissipation of energy, efficiency, national and global energy resources. This unit includes one required practical activity: specific heat capacity. Cell Biology The differences between eukaryotic and prokaryotic cells, specialised cells, the use of microscopes, cell differentiation, the practical uses of stem cells, the cell cycle and mitosis. Bonding, structure, and the properties of matter Ionic bonding, the properties of ionic compounds, diagrams of covalent bonding, properties of simple and giant covalent substances, properties and structure of diamond, graphite and the fullerenes, polymers and alloys, and changes of state. Electricity Electric charge, electric circuits and power. Circuit symbols; current, potential difference and resistance; the properties of current and potential difference in series and parallel circuits; the effect of adding resistors in series and parallel on overall resistance; the names, colours, and purpose of the 3 wires found in the UK mains plug. Organisation Plant and animal tissues, organs and systems, the heart, the blood vessels, the effect of lifestyle on
KNOWING HOW...	Particle model of matter Required practical: Calculating densities of regular and irregular objects. Investigating changes of state in terms of mass; Heating / cooling curves; Changes in states of matter; using scientific models, using appropriate scientific apparatus, identifying resolution, rearranging and applying equations, using prefixes and units of measurements, analysing data from graphs, writing scientific methods. Chemical changes: Required practical: preparation of a pure, dry sample of a soluble salt from an insoluble oxide or carbonate. Required practical: investigate what happens when aqueous solutions are electrolysed using inert electrodes. Write ionic equations for displacement reactions. Investigate pH changes when a strong acid neutralises a strong alkali. Write half equations for the reactions occurring at the electrodes during electrolysis. Infection & response: diagram labelling skills, practice unit conversions, and interpret data graphs. Quantitative Chemistry: Balance equations, calculate formula mass and concentrations, use moles in reactions, and find yields.	Atomic Structure: Master nuclear equations and half-life calculations. Energy Changes: Differentiate exothermic/endothermic reactions. Draw reaction profiles and calculate energy transfers using bond energies. Investigate temperature changes in reacting solutions. Forces: Analyse motion graphs and calculate motion with formulae. Investigate force effects on acceleration and spring stretching. Use Hooke's Law and calculate spring constant. Bioenergetics Measure and calculate the rate of photosynthesis. Extracting and interpreting graphs of photosynthesis rate involving one limiting factor. Writing a method to investigate the effect of light intensity on the rate of photosynthesis.	Cell Biology Required practical: use a light microscope to observe and record animal and plant cells. Required practical: investigate osmosis through plant tissue. Comparison of cell organelles, explaining functions of specialised cells, writing a method for using a microscope to view and prepare cells, identifying variables in an investigation, and evaluating stem cells. Organisation Required practical: Complete tests for protein, lipids, glucose and carbohydrates. Required practical: Investigate the effect of pH on enzymes. Atomic structure and the periodic table Carry out filtration, evaporation, distillation and chromatography to separate mixtures. Make observations for the reactions of Group 1 and Group 7 elements. Extracting information, writing methods for separation techniques, using standard form, relating properties to structure, interpreting practical observations and extracting data from tables/graphs. Bonding, structure, and the properties of matter Ionic and covalent reactions; Investigating ionic compounds; Properties of alloys; Changes in states of matter. The use of 2D and 3D diagrams to represent atoms, balancing equations, making predictions and using state symbols. Energy Required practical: determine specific heat capacity of one or more materials. Calculate elastic potential and/or kinetic energy of a given object; using and rearranging equations, using prefixes, identifying units of measurement, evaluating energy resources and explaining trends in data.

					Electricity Required practical: investigate the factors affecting the resistance of electrical circuits. Required practical: I–V characteristics of a variety of circuit elements, including a filament lamp, a diode and a resistor at constant temperature. Use circuits diagrams to create functioning series and parallel circuits; and draw circuit diagrams from images of electric circuits. Use a range of mathematical formulae to calculate and explain energy transfers in electrical circuits, including efficiency calculations.	
ASSESSMENT	Half-term 1 Particle model of matter: Density States of matter Specific heat capacity Gas pressure Chemical Changes Electrolysis Reactivity of metals Method for making a salt Filtration and evaporation Electrolysis and half equations (HT)	Half-term 2 Infection & response: Drug trials Vaccinations White blood cells and antibiotics Infectious diseases Quantitative Chemistry Calculating percentage by mass Calculating the number of atoms in elements and compounds, using Avogadro's constant Calculating moles and mass Calculating mass from another substance Using calculations to identify the limiting reactant Calculating concentration	Half-term 1 Atomic Structure: Atomic structure Properties of radiation History of the atom Activity and range of radiation Explaining properties Count rate and activity Energy Changes: Exothermic and endothermic reactions Investigating temperature changes Reaction profiles Method for investigating temperature changes Enthalpy calculations	Half-term 2 PHYSICS PAPER 1 (full past paper) Forces Distance Time Graphs Stopping Distances Forces on a Parachutist Weight Forces on a falling Object Force Diagrams/Resultant Force/Acceleration Velocity Time Graphs Momentum Bioenergetics Investigating transpiration as a measure of photosynthesis Anaerobic respiration Investigating photosynthesis Explaining the effect of exercise Limiting factors and light intensity	Half-term 1 Half term 1 in spring term will focus on covering topics studied in year 9, with emphasis being placed on the KS4 content introduced in KS3. Each week. One topic will be covered, with a targeted assessment task being completed to identify gaps in learning.	Half-term 2 BIOLOGY PAPER 1 (full past paper) CHEMISTRY PAPER 1 (full past paper)
	https://www.physicsandmathstutor.com/ ; https://www.freesciencelessons.co.uk/videos/ ; https://www.bbc.co.uk/bitesize/examspecs/z8r997h ; https://www.savemyexams.com/ ; https://www.youtube.com/@ScienceShorts					
Links						

Science Year 11 Curriculum Plan

11	Autumn Term		Spring Term		Summer Term
P R I O R	Using Resources Renewable and non-renewable resources; separation techniques Homeostasis And Response The rate and extent of chemical change Chemical reactions; energy changes in reaction; measuring rates; catalysts; reversible reactions Waves sound waves; light waves; colour; electromagnetic spectrum; reflection and refraction Organic chemistry crude oil as a fossil fuel; boiling points, viscosity, flammability. Chemistry of the atmosphere atmosphere composition; volcanoes; photosynthesis; carbon footprint; pollution		Magnetism and electromagnetism like poles repel, opposites attract. Electric current through conductors Chemical analysis testing for some gases; chromatography; pure/impure substances; Inheritance, Variation and Evolution variation, natural selection; genes; inheritance Ecology food chains and webs; habitats; adaptations; water cycle;		During the summer term, pupils in year 11 will be preparing for their GCSE examinations.
	Using resources Finite and non-finite resources. Sources of water. Methods for purifying water. Methods of sterilising water and how properties of a material are linked to its use. Homeostasis And Response the structure of different neurones, explaining how they work within different reflex actions. The endocrine system, how this is controlled, and the functions of the main hormones involved. The role of hormones in maintaining the balance of water, glucose, and temperature in the body. The process of negative feedback in different contexts, explaining how this helps to maintain balance. Compare and contrast hormonal and nervous responses, the use of IVF to promote fertility and the use of contraceptives to control fertility. The rate and extent of chemical change the term rate of reaction. Collision theory and the four factors that affect the rate of chemical reactions. The units for rate of reactions. Waves The nature of waves. The different regions of the electromagnetic spectrum and the properties and uses of each Organic chemistry the different hydrocarbons. Examples of the alkanes. Separating mixtures using fractional distillation. The process of cracking to make more useful materials. Chemistry of the atmosphere The Earth’s early atmosphere and today’s atmosphere. The changes in the atmosphere over time. The causes of increasing Carbon dioxide levels. The consequences of increasing Carbon dioxide levels and the common atmospheric pollutants.		Magnetism and electromagnetism Permanent and induced magnets. What happens when the poles of magnets are placed near each other. How an electromagnetic field is induced around a solenoid. How an electric motor works. Chemical analysis Pure substances and formulations; the tests for common gases; chromatography. Inheritance, Variation and Evolution How evolution occurs through natural selection. The process and/or impacts of selective breeding. The benefits and risks of genetic engineering. The evidence for evolution. The factors which could lead to extinction. The current issue of antibiotic resistance. Ecology Different levels of organisation in an ecosystem from individual organisms to the whole ecosystem. The effect of changing biotic and abiotic factors on a community. Adaptations and predator/prey relationships. How materials are cycles (water and carbon). Biodiversity and the effect of human interaction on ecosystems.		
	Using resources Required practical: Analyse samples of water from different sources in terms of the pH and presence of dissolved solids and distil sea water to obtain potable water. Analysing lifecycle assessment data to compare environmental impact of products. Homeostasis And Response Planning an investigation into the effect of a factor on reaction times. Identifying scientific variables especially control variables. The rate and extent of chemical change Applying collision theory to explain the effect of concentration, temperature, surface area. and catalysts on rate of reaction. Drawing reaction profile graphs and use them to draw conclusions. Calculating mean / rate at a given point in time Waves Required practical: measure frequency, wavelength and wave speed by observing water waves in a ripple tank and by observing waves in a solid. Required practical: Investigate how the amount of infrared radiation absorbed or radiated by a surface depends on the nature of that surface. Identifying distinctive features of transverse and longitudinal waves. Calculating wave speed, frequency and wavelength using formulae. Organic chemistry Recognising substances that are alkenes from their names or from given formulae. Labelling a diagram of fractional distillation. Applying understanding of MP and BP data. Chemistry of the atmosphere Extracting and interpreting information about resources from charts, graphs, and tables (especially focusing on pie charts).		Magnetism and electromagnetism Using the right-hand grip rule. Using Fleming’s left-hand rule. Calculating magnetic flux density. Chemical analysis Required practical: Investigate how paper chromatography can be used to separate coloured substances. Using melting point and boiling point data to distinguish pure from impure substances. Interpreting chromatograms and calculating Rf values. Inheritance, Variation and Evolution Explaining the benefits and risks of selective breeding given appropriate information and consider related ethical issues. Extracting information from an evolutionary tree. Classifying organisms using the Linnaean system. Understanding how scientific methods and theories develop over time. Ecology Required practical: measure the population size of a common species in a habitat. Use sampling techniques to investigate the effect of a factor on the distribution of this species. Extract and interpret information from charts, graphs and tables relating to the interaction of organisms within a community. The process of peer review.		
A S S E S S M E N T	Half-term 1 Using Resources RP: Purifying water Earth’s resources and LCA Recycling resources Using plastic bags		Half-term 2 PPE Examination 1 – scientific investigative skills Waves Properties of waves Investigating sound waves Calculating wavelength		
	Half-term 1 Short, targeted assessment on magnetism and chemical analysis. PPE 2 – Chemistry and Physics paper 2’s (full papers)		Half-term 2 Biology Paper 2 (full paper) Pupils will complete weekly assessment tasks based on each classes identified priorities.		

	Extracting copper Homeostasis & control Blood glucose and controlling diabetes Investigating reaction times Reflex versus voluntary actions Reproductive hormones Homeostasis The rate and extent of chemical change Using a catalyst Affect of concentration Activation energy and collision theory Method – disappearing cross Equilibrium and tangent drawing	Electromagnetic spectrum Oscillations Organic Chemistry Crude oil Cracking Combustion Alkanes and alkenes Evaluations Atmosphere Earth’s atmosphere Pollution Environmental impact Carbon footprint Evaluations					
LINKS	BIOLOGY PAPER 1 PMT Biology: https://www.physicsandmathstutor.com/biology-revision/gcse-aqa/ Free Science Lessons topic playlists: https://www.youtube.com/@FreeScienceLessons/playlists Primrose Kitten Biology Paper 1: https://www.youtube.com/watch?v=h?v=mKYQ-K23Mr4&list=PL7O6CcKg0HaGnykp12D8yVee_SEQdaEHH BBC Bitesize Biology Paper 1: https://www.bbc.co.uk/bitesize/examspecs/z8r997h Save My Exams Biology: https://www.savemyexams.com/-/biology/#gcse Science Shorts Biology Paper 1: https://www.youtube.com/watch?v=x2Gi9SKNI98&ab_channel=ScienceShorts	CHEMISTRY PAPER 1 PMT Chemistry: https://www.physicsandmathstutor.com/chemistry-revision/gcse-aqa/ FreeScienceLessons topic playlists: https://www.youtube.com/@FreeScienceLessons/playlists Primrose Kitten Chemistry Paper 1: https://www.youtube.com/watch?v=MpQ-3YAwnhl BBC Bitesize Chemistry Paper 1: https://www.bbc.co.uk/bitesize/examspecs/z8r997h Save My Exams Chemistry: https://www.savemyexams.com/gcse/chemistry/ Science Shorts Chemistry Paper 1: https://www.youtube.com/watch?v=BicUweYXptI	PHYSICS PAPER 1 PMT Physics: https://www.physicsandmathstutor.com/physics-revision/gcse-aqa/ FreeScienceLessons topic playlists: https://www.youtube.com/@FreeScienceLessons/playlists Primrose Kitten Physics Paper 1: https://www.youtube.com/watch?v=tw-Z0nllA4 BBC Bitesize Physics Paper 1: https://www.bbc.co.uk/bitesize/examspecs/z8r997h Save My Exams Physics: https://www.savemyexams.com/gcse/physics/ Science Shorts Physics Paper 1: https://www.youtube.com/watch?v=cN99zxZagml	BIOLOGY PAPER 2 PMT Biology: https://www.physicsandmathstutor.com/biology-revision/gcse-aqa/ Free Science Lessons topic playlists: https://www.youtube.com/@FreeScienceLessons/playlists Primrose Kitten Biology Paper 2: https://www.youtube.com/watch?v=6r3NZcPdKtM BBC Bitesize Biology Paper 2: https://www.bbc.co.uk/bitesize/examspecs/z8r997h Save My Exams Biology: https://www.savemyexams.com/-/biology/#gcse Science Shorts Biology Paper 2: https://www.youtube.com/watch?v=1zuIEl6WG5	CHEMISTRY PAPER 2 PMT Chemistry: https://www.physicsandmathstutor.com/chemistry-revision/gcse-aqa/ FreeScienceLessons topic playlists: https://www.youtube.com/@FreeScienceLessons/playlists Primrose Kitten Chemistry Paper 2: https://www.youtube.com/watch?v=HJu8WTtZJU BBC Bitesize Chemistry Paper 2: https://www.bbc.co.uk/bitesize/examspecs/z8r997h Save My Exams Chemistry: https://www.savemyexams.com/gcse/chemistry/ Science Shorts Chemistry Paper 2: https://www.youtube.com/watch?v=NgR6EMufPE	PHYSICS PAPER 2 PMT Physics: https://www.physicsandmathstutor.com/physics-revision/gcse-aqa/ FreeScienceLessons topic playlists: https://www.youtube.com/@FreeScienceLessons/playlists Primrose Kitten Physics Paper 2: https://www.youtube.com/watch?v=X1aMXCr75Kw BBC Bitesize Physics Paper 2: https://www.bbc.co.uk/bitesize/examspecs/z8r997h Save My Exams Physics: https://www.savemyexams.com/gcse/physics/ Science Shorts Physics Paper 2: https://www.youtube.com/watch?v=N4gILBDIVtw	REQUIRED PRACTICALS Malmesbury Education: https://www.youtube.com/@MalmesburyEducation Free Science Lessons: https://www.youtube.com/@FreeScienceLessons/playlists PMT Required Practicals: https://www.physicsandmathstutor.com/