Year 10						
	Half Term 1	**Half Term 2**	**Half Term 3**	**Half Term 4**	**Half Term 5**	**Half Term 6**
Topic	Organ systems Structure and bonding	Human interaction Newtons laws	Controlling reactions	Home electricity Fields	Energy stores Atmosphere	EM radiation Genetics
Key concepts	Circulatory system Non communicable disease Types of bonding Structure and properties Electrolysis	Biodiversity Pollution Communicable disease Newtons 2nd law Momentum	Collision theory Bond energies Equilibrium	Energy resources Circuit components Power Gravitation and magnetism Force on conductors	Heat transfer Energy conservation Internal energy Force and work Elastic materials Changing atmosphere Climate change Air pollutants	Electromagnetic spectrum Wave energy Genes Monohybrid inheritance Genetic engineering
Knowledge & Understanding Milestones	Describe the structure of the cardiovascular system and how it functions Identify non-communicable diseases and their risk factors Interpret information from graphs Explain different types of bonding between atoms Give the structure and Properties of different compounds	Evaluate the impact environmental changes have on the distribution of a species in an ecosystem (triple only). Explain how waste, deforestation and global warming have an impact on biodiversity and how we can reduce this. Assess the environmental implications of deforestation. Describe some of the biological	Understand how energy changes during a chemical reaction Explain the Importance of controlling Rate of Reaction Be able to measure rate of reaction Understand how different factors affect rate of reaction Chem (triple) – Explain how cells and fuel cells work Understand the effect of changing certain factors on a reaction in equilibrium	Students should be able to calculate electrical energy Students should be able to list advantages and disadvantages of different renewable and non-renewable Students can explain the differences between AC and DC electricity Students can describe how electricity is transmitted round the county by The National Grid	State examples of energy stores and give examples of how machines convert one type of energy to another. Apply the idea of conservation of energy Calculate internal energy changes,(specifically thermal, using SHC) Describe National energy resources and calculate efficiency. Calculate work done and recognise that machines can give bigger force but at the expense of movement	Describe what happens when light is reflected and refracted Describe some of the uses of ultrasound State the electromagnetic waves in the spectrum in the correct order Describe a property and use of some of the waves in the electromagnetic spectrum (Triple Only) Explain what happens when some electromagnetic

	Explain the process and uses of electrolysis	consequences of global warming. Describe some of the biological factors affecting levels of food security and how to improve production. Explain the idea of Hooke's law. Explain the concept of pressure in the atmosphere and in fluids. Explain the idea of momentum and changes in momentum during collisions. Explain the idea of moments and apply them to real life situations. Describe and apply Newton's three laws of motion. Explain the difference between thinking distance, braking distance and overall stopping distance. Describe reaction time and some factors that might affect it.		Know what a solenoid is, able to draw the field and state factors that affect it. H: Able to use Flemings LH rule and calculate using F=BIL and apply this to motors. Triple H: Explain the function and operation of Loudspeakers and Microphones. Triple H: use the generator effect to explain how generators induce a pd and interpret graphs of DC and AC and microphone outputs. Triple H: Explain the role, operation of transformers. Calculate pd, current, power and efficiency of transformers and investigate one factor which affects the output.	Explain how the Earths atmosphere has changed from the early earth to the present day. Explain how the greenhouse effect keeps the planet warm enough for life. Explain the causes and effects of global warming. Explain the causes and effects of atmospheric pollution.	radiation is absorbed or emitted. How genetic information is transferred through the generations
Scaffolding for SEND to ensure quality first teaching.	Foundation worksheets Differentiated questioning, TFW, Recall quizzes, Vocab introduction,	Foundation worksheets Differentiated questioning, TFW, Recall quizzes, Vocab introduction, Dual	Foundation worksheets Differentiated questioning, TFW, Recall quizzes, Vocab introduction, Dual	Foundation worksheets Differentiated questioning, TFW, Recall quizzes, Vocab introduction,	Foundation worksheets Differentiated questioning, TFW, Recall quizzes, Vocab introduction, Dual	Foundation worksheets Differentiated questioning, TFW, Recall quizzes, Vocab introduction, Dual

	Dual coding, Knowledge organisers. SEN tests	coding, Knowledge organisers. SEN tests	coding, Knowledge organisers. SEN tests	Dual coding, Knowledge organisers. SEN tests	coding, Knowledge organisers. SEN tests	coding, Knowledge organisers. SEN tests
Careers input	Dietician, nutritionist, doctor, nurse, researcher Chemical analyst, Forensic science, Metal extraction, material chemist, Pharmacologist, Toxicologist	Ecology, farming, environmental protection, waste management & recycling, research scientist. Engineering	Research Chemist Chemical Engineer Development Chemist	Electrical Engineers, Energy Consumption Advisors, Power Generation Engineers, Civil Engineers Electrician, power generation industry, music technician	Building & architecture, Renewable fuel industry Environmental Scientist, Analytical Chemist Meteorologist	Radiographer, Ultrasound Engineer Geneticist; plant or animal breeder; molecular biologist
Links (prior knowledge, future knowledge)	**In subject:** **Prior:** Body systems (Y8) Properties and changes of materials (Y5/6) Substances and particles (Y7) Elements and compounds (Y8) Periodic Table (Y9) **Future:** Feedback and control (Y11) Cardiovascular system (Y12 Biology)	**In subject:** **Prior:** **Interdependence (Y8)** Contact forces (Y7) Speed (Y8) Acceleration (y9) **Future:** Genetic diversity and adaptation (Y12). Energy and ecosystems (Y13). **Outside of subject:** Geography -Climate change (Y7, Y8, Y10) Pollution (Y8) Human impact on the environment (Y8)	**In subject:** **Prior:** Changing substances (Y7) Reactants and products (Y8) Matter and energy (Y9) **Future:** Making substances (Y11) **Outside of subject:** Maths – rearranging equations, gradients and tangents	**In subject:** **Prior:** Electric circuits (Y7) Electrical energy (Y8) Magnetism (Y8) **Future:** N/A Space physics (Y11) **Outside of subject:** Maths - Rearranging Equations Maths - Ratio	**In subject:** **Prior:** Energy Transfers (Y7) Heating and Cooling (Y8) Rocks (Y8) Earths resources (Y9) **Future:** Energy Conservation (Y11) Materials (Y11) **Outside of subject:** Geography Geography – Global warming, pollution	**In subject:** **Prior:** Light (Y5/6) Evolution and inheritance (Y5/6) Reproduction (Y7) **Future:** Waves (Y11) Y10 controlling reproduction; Y11 diversity of life **Outside of subject:**

	Carbon Chemistry (Y11) **Outside of subject:** PE – Heart and cardiovascular system D&T: Materials Geography: Extraction of metals	Ecosystems inc biomes, food webs (Y10) Food tech – Food , nutrition and health inc mycoprotein (Y10) Food tech – food provenance (sustainability, waste)(Y10) Math - Circles (Y8) Circles (clear areas around antibiotic discs) (Y9) Maths - Rearranging formula. Life skills - Effects of alcohol				Maths - Angles, using a protractor (Y8) Maths - Ratios/ percentages History - History of medicine
Key Vocabulary	Cardiovascular system, non-communicable, blood vessels. Properties, polymers, monomers, covalent, ionic, metallic, bonding, electrons, electrolysis, compounds	Biodiversity, sustainability, environment, pollution, global warming, organisms, biomass, food security, efficiency Pressure, momentum, moment, reaction time, extension, conservation	Conservation, energy, exothermic, endothermic, reaction profiles, alcohol, combustion, cells, rates, catalysts, collision theory, reversible, dynamic equilibrium.	Energy, renewable, non-renewable, National grid, power, resistance, current, voltage, fuse, charge. Solenoid, field, generator, transformers.	Kinetic, energy, potential, extension, proportionality, gravitational, Acceleration, power, energy, particles, kinetic, potential, state, sublimate, temperature, thermal, efficiency. Reactivity, atmosphere, composition, evolving, global, climate, carbon footprint, pollutants	Reflected, refracted, ultrasound, electromagnetic, absorbed, emitted. Asexual, sexual, meiosis, DNA, genome, synthesis, inheritance, crosses, chromosomes, disorders, enzymes, genetic modification.

Review & Assessment Dates (including opportunities for retrieval practice)	Test at the end of the module POAE – Planning task marked. Planning. Knowledge of methods. Millar – Learn a fact. Learn a theory.	Test at end of the module	Test at the end of the module POAE – Evaluation task marked (Foundation) Or Analysis task marked (Higher) Analysis and evaluation. Knowledge of data analysis. Millar – Learn a relationship.	Test at the end of the module POAE – Analysis task marked Knowledge of data analysis. Millar – Learn a relationship.	Test at the end of the module	Test at the end of the module