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	Year 7					
	HT1 Topic/Unit: Particles (Chemistry)	**HT2 Topic/Unit: Forces (Physics)**	**HT3 Topic/Unit: Interdependence and cells (Biology)**	**HT4 Topic/Unit: Types of reaction and the periodic table (Chemistry)**	**HT5 Topic/Unit: Energy (Physics)**	**HT6 Topic/Unit: Reproduction and Variation (Biology)**
Key Content:	1. Routines and Expectations (optional) 2. Variables 3. Accuracy 4. Equipment 5. Following a method 6. Drawing graphs 7. Maths in Science 8. States of matter (inc. density) 9. Changes of state **10. Melting and boiling points (Practical)** **11. Expansion and contractions (Demonstration)** 12. Brownian Motion and the particle model (Demonstration) 13. Types of transport 14. Atoms and elements 15. Compounds and mixtures 16. Symbols and formulae 17. Atomic Structure	**1. Identifying forces – contact vs non-contact** **2. Balanced and unbalanced forces** 3. Resultant force 4. Friction- advantages and disadvantage **5. Streamlining- everyday examples and linked to particles (EXT) (Practical)** 6. Speed calculations 7. Distance- time graphs 8. Velocity-time graphs **9. Hooke's Law- (Practical)** 10. Moments 11. Gravity, weight, and mass 12. Solar system 13. Day and night 14. Seasons 15. Galaxies and universe 16. Light year	1. Living things: MRS NERG 2. 5 Kingdoms and classes 3. Classification and keys **4. Food chains** **5. Food webs** 6. Pyramids of numbers 7. Environment and habitats 8. Competition **9. (Practical) Microscopes** **10. Animal cells (Practical)** **11. Plant cells (Practical** 12. Prokaryotic vs eukaryotic 13. Specialised cells 14. Stem cells 15. Cells, tissues, organs, systems	1. **Physical and Chemical reactions** 2. Pure substances and solubility 3. **Rates of dissolving (Practical)** 4. **Filtration (Practical)** 5. **Crystallisation (linking to evaporation) (Practical)** 6. **Simple Distillation (Demonstration)** 7. **Chromatography (Practical)** 8. Acids and Alkalis 9. **Indicators (Practical)** 10. **Neutralisation (Practical)** 11. The periodic table – structure 12. History of the periodic table 13. Metals and non-metals 14. Ceramics, Polymers, Composite	1. Energy Stores 2. Energy transfers 3. Useful and wasted energy 4. Efficiency calculations 5. Energy in food 6. Heating and thermal equilibrium **7. Conduction, convection, and radiation (Practical)** 8. Preventing heat loss- practical skills 9. The National Grid 10. Renewable and non-renewable 11. Generating electricity from renewable and non-renewable sources 12. Renewables- advantages and disadvantages 13. Nuclear energy 14. Calculations: power and energy costs	1. Male and female reproductive organs in humans and plants 2. Gametes – humans and plants 3. Fertilisation in humans 4. Pregnancy and gestation 5. Effect of maternal lifestyle 6. Menstrual cycle 7. Pollination and seed dispersal 8. Quantitative investigations of dispersal mechanisms 9. Genetic and environmental variation 10. Variation 11. Adaptation 12. Natural Selection 13. Selective Breeding 14. Endangered species and extinction 15. Biodiversity

	Year 8					
	HT1 Topic/Unit: Waves and Pressure (physics)	**HT2 Topic/Unit: Chemical Reactions (chemistry)**	**HT3 Topic/Unit: Energy from Food (Biology)**	**HT4 Topic/Unit: Electricity and Magnetism (physics)**	**HT5 Topic/Unit: Reactions and the Environment (chemistry)**	**HT6 Topic/Unit: Keeping Healthy (biology)**
Key Content:	**1. Transverse and longitudinal (EXT)** **2. Producing sounds (Demonstration)** 3. How sound travels 4. Hearing sounds – structure of the ear **5. Properties of sound waves (Demonstration)** 6. Using sound: ultrasound and echo waves 7. Waves – EM waves (inc water waves) 8. Introduction to light 9. Comparing sound & light waves 10. Wave calculations **11. The eye (Optional Practical/demonstration)** **12. Reflection (diffuse and specular) (Practical)** **13. Refraction (inc. prisms) (Practical)** **14. Pressure (over area) (Demonstration)** **15. Pressure (in liquids) (Demonstration)** 16. **Pressure (in gases) (Demonstration)**	1. Atomic Structure 2. Electronic Configuration **3. Alkali metals (group 1)** 4. Halogens (Group 7) 5. Noble Gases (Group 0) **6. Reactivity of Group 1 and 7 (EXT)** 7. Naming compounds (EXT) 8. Writing formulae (EXT) **9. Exothermic and endothermic reactions** **10. Testing for gases** **11. Metals and oxygen (Practical)** **12. Metals and acid reactions (Practical)** 13. Acids and hydroxides **14. Acids and carbonates (Practical)** **15. Combustion (Demonstration)** 16. Word and symbol equations 17. Balancing equations 18. Conservation of mass	1. Food groups 2. Balanced and unbalanced diets **3. Energy in food (Practical)** **4. Tissues and organs of the digestive system (Demonstration)** 5. Digestion 6. Absorption – diffusion, active transport, osmosis (EXT) 7. Enzymes in the digestive system 8. Photosynthesis **9. Investigating Photosynthesis (Practical)** 10. Leaf adaptations – Gas exchange 11. Root adaptation - Absorption of water **12. Testing for starch (Practical)**	**1. Conductors and Insulators (Practical)** **2. Electrical circuits (Practical)** **3. Current (Practical)** 4. Potential difference 5. Measuring potential difference **6. Series and Parallel circuits (Practical)** 7. Resistance in a circuit 8. Power in a circuit **9. Static electricity (Demonstration)** 10. Magnets 11. Making Magnets **12. Drawing magnetic fields (Practical)** 13. Earth's magnetic field **14. Electromagnets (Practical)** 15. Using Electromagnets (inc. introduction to D.C. motors)	**1. The Reactivity series (Practical)** 2. Displacement reactions 3. Extracting metals 4. Rates of reaction (EXT) **5. Thermal decomposition and catalysts (Practical)** 6. Composition of the Earth 7. Structure of the Earth 8. The Rock Cycle 9. Igneous rocks 10. Sedimentary rocks **11. Metamorphic rocks (Practical)** 12. Fossil fuel formation 13. The Earth's Atmosphere 14. The carbon cycle 15. Climate change and the greenhouse effect Finite resources and recycling	1. Sub cellular structures (recap) 2. Cells, tissues, organs, and systems **3. The lungs (Demonstration)** 4. Breathing **5.** Gas exchange **6. The heart and blood (Demonstration)** 7. The circulatory system 8. The skeletal & muscular system 9. Aerobic respiration 10. Anaerobic respiration **11. Exercise and respiration (Practical)** 12. Communicable vs non communicable diseases 13. Microorganisms 14. Pathogens 15. Antibiotics 16. Human defences 17. Vaccination 18. Drugs & lifestyle choices

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	Year 9					
	HT1 Topic/Unit: Chemistry Fundamentals (Chemistry)	**HT2 Topic/Unit: Energy, Waves and Astronomy (Physics)**	**HT3 Topic/Unit: Cell Biology and Human Anatomy (Biology)**	**HT4 Topic/Unit: Investigative Chemistry (Chemistry)**	**HT5 Topic/Unit: Forces (Physics)**	**HT6 Topic/Unit: Communicable Diseases (Biology)**
Key Content:	1. Changing states of matter 2. Atoms and elements 3. Compounds and formulae 4. Pure substances and solutions **5. Separation techniques (Demonstration)** **6. Chromatography (Practical)** 7. Changing Atomic Theories 8. Protons, Neutrons and Electrons 9. Electron configuration 10. Isotopes and relative atomic mass 11. The periodic table 12. Metals and non-metals 13. Uses of metals 14. Alloys 15. Properties and uses of alloys **16. Alkali metals (Demonstration)** 17. Halogens **18.** Noble Gases 19. **Gas tests (Demonstration/Practical)**	1. Energy stores and energy transfers 2. Open and closed systems 3. Work done 4. Power 5. Efficiency calculations 6. Insulation **7. Gravitational potential energy** 8. Kinetic energy 9. Elastic potential energy 10. Multi-step calculations (GPE/KE/EPE/Efficiency) 11. Energy Resources 12. Introduction to waves 13. Waves equation 14. Measuring period of a wave **15. RP: Measuring speed of a wave using a ripple tank** 16. Measuring the speed of sound **17. EM Spectrum** **<u>Astronomy</u>** *1. Solar System* *2. The Planets* *3. Moons* *4. Life Cycle of a star* *5. Orbits* *6. Galaxies* *7. Red Shift and Expanding Universe* *8. The Big Bang Theory*	9. Types of cells 10. Specialised cells 11. Tissues, organs, and systems **12. Microscopes** 13. The Human Genome 14. Mitosis and the cell cycle 15. Incredible stem cells 16. Therapeutic cloning 17. Asexual reproduction 18. Sexual and Asexual reproduction and Meiosis 19. Inheritance (genetic cross diagrams) 20. Family trees 21. Genetic diseases and sex determination **<u>Human Anatomy</u>** **1. The brain** **2. The heart** **3. The Lungs** **4. The Kidneys** **5. The Eye** **6. The Ear** **7. The Skeleton**	1. Ionic bonding 2. Properties of ionic bonding 3. Covalent bonding 4. Properties of covalent structures 5. Giant covalent structures 6. Metallic Bonding 7. Comparing and contrasting types of bonding 8. Word and symbol equations 9. Balancing equations 10. Conservation of mass 11. Reactions with Metals **12. Redox reactions (Higher only)** **13. Acids and bases** 14. Neutralisation **15. RP: Soluble Salts** **19. Reactivity series and displacement reactions (Practical)** 20. Ionic half equations for displacement (Higher only) 21. Reactivity series and extraction methods 22. Electrolysis of molten compounds (ionic half equations - higher only) 23. Electrolysis of aqueous compounds (ionic half equations - higher only) **24. Electrolysis part 1 (Practical)** 25. **Electrolysis part 2 (Practical)**	1. Types of forces 2. Weight 3. Resultant forces 4. Vector diagrams 5. Speed and velocity 6. Distance time graphs **7. Acceleration and deceleration** 8. Velocity time graphs 9. Terminal Velocity 10. Newton's first law 11. Newton's second law 12. Inertia and inertial mass ((higher only) **13. Investigate Newton's Second Law of motion (R. Practical)** 14. Newton's third law 15. Stopping distances 16. Momentum (higher only) **17. Hooke's Law** 18. Relationship between force and extension 19. Circular Motion **20. Magnets** **21. Electromagnets**	1. Pathogens 2. Our barriers to diseases 3. The immune system 4. Vaccinations 5. Medicines 6. Multiplying bacteria 7. Culturing microorganisms **8. Investigating Antiseptics (part 1)** **9. Investigating antiseptics (part 2)** 10. Analysing Antibiotics 11. Antibiotic resistance 12. Developing new drugs (part 1) 13. Developing new drugs (part 2)

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	Year 10					
	HT1 Topic/Unit: Reacting Substances (Chemistry)	**HT2 Topic/Unit: Electricity and Astrophysics (Physics)**	**HT3 Topic/Unit: Human Biology (Biology)**	**HT4 Topic/Unit: humans and the Earth (Chemistry)**	**HT5 Topic/Unit: Nuclear and Thermal Physics (Physics)**	**HT6 Topic/Unit: Plant Biology (Biology)**
Key Content:	**1. Exothermic and endothermic reactions** **2. Temperature Changes (R.Practical)** 3. Reaction profiles 4. Bond energies (higher) 5. Measuring the rate of reaction 6. Factors affecting rates of reaction 7. Drawing rates of reaction graphs **8. Factors affecting rates of reaction (R.Practical)** **9. Catalysts** **10. Reversible reactions (Demonstration)** 11. Chatelier Principle (higher only) 12. Factors affecting equilibrium (higher only) 13. Word equations and conservation of mass 14. Relative Formula Mass 15. Reacting Masses (higher only) 16. Calculating mass of a solute 17. Calculating moles in a solution (higher only) 18. Explaining concentration (higher only)	**1. Electrical Circuits Introduction** 2. Calculating current **3. Current in circuits (practical)** **4. Potential Difference in circuits (practical)** 5. Resistance in circuits **6. Factors affecting resistance (R.Practical)** 7. Ohm's Law **8. Light Dependent Resistors (Demonstration)** **9. Thermistors (Demonstration)** **10. Investigating non-Ohmic conductors (R.Practical)** 11. Mains electricity and AC & DC **12. Plugs (Practical)** 13. Power calculations 14. Work done calculations 15. Equations practice 16. National Grid and Transformers	1. Aerobic respiration 2. Anaerobic respiration **3. The lungs (Demonstration)** 4. **The heart (Practical/Demonstration)** 5. Blood vessels and blood flow 6. Composition of blood 7. Cardiovascular diseases 8. Digestion 9. Enzymes **10. Testing for food groups (R.Practical)** **11. pH and Enzymes (R.Practical)** 12. Reaction rates in the body 13. Diffusion	1. The Early Earth's Atmosphere 2. Theories of the atmosphere 3. The Greenhouse Effect 4. Effects of global warming 5. Reducing our carbon footprint 6. The Harmful Effects of Combustion 7. Resources used by humans 8. Sustainable development 9. Potable Water 10. Desalination 11. Evaluating potable water methods **12. Analysing water samples (R.Practical)** 13. Wastewater 14. Sewage Treatment 15. Phytomining and bioleaching 16. Life Cycle Assessment 17. Reduce, Reuse, Recycle 18.	**1. EM Spectrum** 2. Atomic physics 3. Radioactive decay 4. Nuclear equations 5. Half life 6. Contamination and Irradiation 7. Particle model - density and states **8. Changes of state** **9.** Heating and temperature **10. Calculating density (R.Practical)** 11. Pressure in gases 12. Specific heat capacity **13. Investigating specific heat capacity (R.Practical)** 14. Latent hea 15. Heating and cooling graphs	1. Food webs 2. Predator and prey graphs 3. Ecological Sampling techniques **4. Quadrats (R.Practical)** 5. Distribution patterns 6. Pyramids of biomass and tropic levels 7. Plant cells, tissues and organs 8. Osmosis **9. Osmosis (R. Practical)** 10. Active transport 11. Transpiration & Translocation 12. Photosynthesis **13. Photosynthesis (R. Practical)** 14. Using glucose and nitrogen in plants 15. Limiting factors (higher only) 16. Inverse square law (higher only) 17. Carbon Cycle 18. Water cycle 19. Biodiversity and human impact 20. Maintaining biodiversity

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	Year 11					
	HT1 Topic/Unit: Using Biology to our Advantage (Biology)	**HT2 Topic/Unit: Organic Chemistry and Polymers (Chemistry)**	**HT3: Revision**	**HT4: Revision**	**HT5: Revision**	
Key Content:	1. Classification 2. Natural selection and evolution 3. Evidence for evolution 4. Genetic cross diagrams 5. Selective breeding 6. Genetic engineering and modification 7. The nervous system & synapses 8. Conscious and unconscious responses **9. Investigating human reaction time (R. Practical)** 10. Homeostasis 11. The Endocrine system 12. Negative feedback loops (higher only) 13. Controlling glucose 14. Diabetes 15. Hormones and the Menstrual cycle 16. Contraception 17. IVF (higher only) 18. Embryo screening 19. Comparing nervous and hormonal responses **<u>Organic Chemistry and Polymers</u>** 1. Crude Oil 2. Alkanes and Alkanes **3. Bromine Test (Practical)** 4. Fractional Distillation 5. Cracking 6. **Polymers** 7. Reducing our human impact	**1. Magnets** **2. Electromagnets (Demonstration)** **3. The Motor Effect (Flemings' left-hand rule) (Demonstration)** 4. Magnetic Flux Density (higher only) **5. Generating electricity (Demonstration)** 6. National Grid and Transformers *lots of these topics covered earlier in the curriculum but revisited here because they are difficult concepts for students.	**Interleaved practice and application to different contexts** Address gaps in knowledge and build on links between different topics when applied to a range of scenarios	**Interleaved practice and application to different contexts** Address gaps in knowledge and build on links between different topics when applied to a range of scenarios	**Interleaved practice and application to different contexts** Address gaps in knowledge and build on links between different topics when applied to a range of scenarios	

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