

Mulberry Academy Woodside Science Curriculum Overview 2024 - 2025

Curriculum intent statement:

The Science department at Mulberry Academy Woodside aims to deliver a curriculum which encourages students to develop a love of Science and lifelong learning. The curriculum will help students to develop their scientific capital by developing their understanding and skills and exposing them to a range of different viewpoints

We want students to be able to:

- Think critically about the latest developments in Science and the effects that these developments may have on themselves and the wider world
- Develop the skills and knowledge to be able to carry out scientific enquiry and transfer these skills to other disciplines
- Take an interdisciplinary approach and realise that Science covers a breadth of different subjects outside of Biology, Chemistry and Physics

KS4		AUTUMN TERM		SPRINC	SPRING TERM		SUMMER TERM	
Edexcel		TERM 1A	TERM 1B	TERM 2A	TERM 2B	TERM 3A	TERM 3B	
YEAR 10	KNOWLEDGE	Chemistry Paper 1: Unit 1: Key Concepts Atomic Structure Empirical and Molec Periodic Table Ionic Bonding Electrolysis Covalent Bonding Metallic Bonding Metal Extraction and Unit 2: Particles and I Particle Model Separating Techniqu Solution Calculations Calculations with Ma Dynamic Equilibrium Acids and Alkalis	d Recycling Reactions s bles	Biology Paper 1:Unit 1: Key Concepts• Cells and Microscope• Enzymes• Transport Processes• osmosis, and active trUnit 2: Cells and Gene• Mitosis• Meiosis• Growth in Animals a• Stem Cells• The Nervous System• DNA• Inheritance and VariUnit 3: Evolution• Classification• Genetic Engineering• Artificial Selection• Human EvolutionUnit 4: Health and Dise• Non-communicable• Communicable Dises• Pathogens• Barriers to Infection• Immune System Res• Antibiotics	es (including diffusion, ansport) etics and Plants and Reflexes jation by Natural Selection	Physics Paper 1:Unit 1: Forces and Max• Vectors and Scalars• Speed, Velocity, and• Newton's Laws of Max• Newton's Laws of Max• MomentumUnit 2: Energy• Energy Stores and Tax• Energy Efficiency• Kinetic and Gravitata• Energy ResourcesUnit 3: Waves and the• Properties of waves• Wave speeds• Refraction• Electromagnetic Spe• Use and Dangers of• SpectrumUnit 4: Radioactivity• Atomic Structure• Background Radiation• Half-Life• Hazards of Radioactivity	d Acceleration otion ransfers tional Potential Energy e EM Spectrum the Electromagnetic	

SKILLS	 Practical skills: Lab safety Identifying risks and hazards Use of a Bunsen burner Manipulating lab equipment Planning an experiment Writing conclusions Evaluating results Evaluating experimental techniques Mathematical skills: Calculations and rearranging equations Using standard form Significant figures and decimal places Calculations using moles (H) Calculating numbers of subatomic particles Use of percentages in calculating relative atomic mass (Ar) and percentage composition Use of ratios in calculating empirical and molecular formulae Use of logarithmic scales (pH scale) Literacy Skills Meanings and use of words that are central to understanding scientific concepts Identifying common prefixes and suffixes to decode keywords 	 Practical skills: Manipulating lab equipment Measuring accurately Planning an experiment Writing conclusions Evaluating results Evaluating experimental techniques Using a data logger Mathematical skills: Calculations and rearranging equations Use of mathematical symbols (e.g. delta, Δ) Unit conversions and the use of SI prefixes Using standard form Significant figures and decimal places Drawing half-life graphs Literacy Skills Meanings and use of words that are central to understanding scientific concepts Identifying common prefixes and suffixes to decode keywords 	 Practical skills: Lab safety Identifying and managing biological hazards Use of a microscope Manipulating lab equipment Planning an experiment Writing conclusions Evaluating results Evaluating experimental techniques Mathematical skills: Calculations and rearranging equations Using standard form Unit conversions and the use of SI prefixes Significant figures and decimal places Identifying anomalies Drawing graphs Identifying and describing trends Rate calculations Literacy Skills Meanings and use of words that are central to understanding scientific concepts Identifying common prefixes and suffixes to decode keywords
	 Use of logarithmic scales (pH scale) Literacy Skills Meanings and use of words that are central to understanding scientific concepts Identifying common prefixes and suffixes 	to decode keywords	conceptsIdentifying common prefixes and suffixes

YEAR	KNOWLEDGE	Biology Paper 2	Physics Paper 2:	Chemistry Paper 2:
11		Unit 1: Plant Biology • Photosynthesis • Plant Transport Processes • Plant Cell Adaptations	Unit 1: Energy and Forces • Work and Power • Interacting Fields • Vector Diagrams	Unit 1: Groups in the Periodic Table • Group 1 Elements • Group 7 Elements • Group 0 Elements
Unit 2: He Hormon The Men Control Type 1 a Unit 3: Re Aerobic Adaptat The Circ Unit 4: Ee Ecosyste Human		 Unit 2: Hormones Hormones The Menstrual Cycle and Hormones Control of Blood Glucose by Hormones Type 1 and Type 2 Diabetes Unit 3: Respiration Aerobic Respiration Adaptations of the Respiratory System The Circulatory System Unit 4: Ecosystems Ecosystems Human Impacts on Ecosystems Material Cycles 	Unit 2: Electricity and Magnetism • Circuits • Current, Potential Difference, and Resistance • Transferring Energy • Electrical Safety • Magnetism • Electromagnetism • Motor Effect • Transformers Unit 3: Particle Theory • Kinetic Theory and Density • Specific Heat Capacity and Specific Latent Heat • Kelvin Temperature Scale	 Unit 2: Rates of Reaction Rates of Reaction Factors Affecting Rates of Reaction Catalysts Endothermic and Exothermic Reactions Unit 3: Hydrocarbons Crude Oil Fractional Distillation Combustion Cracking Earth's Early Atmosphere Climate Change
	SKILLS	Practical skills: • Lab safety • Identifying and managing biological hazards • Use of a microscope • Manipulating lab equipment • Planning an experiment • Writing conclusions • Evaluating results • Evaluating experimental techniques Mathematical skills: • Calculations and rearranging equations • Using standard form • Unit conversions and the use of SI prefixes • Significant figures and decimal places • Identifying anomalies • Drawing graphs	 Springs and Extension Practical skills: Manipulating lab equipment Measuring accurately Planning an experiment Writing conclusions Evaluating results Evaluating experimental techniques Using a data logger Mathematical skills: Calculations and rearranging equations Use of mathematical symbols (e.g. delta, Δ) Unit conversions and the use of SI prefixes Using standard form Significant figures and decimal places Selecting the correct equation from a given list 	Practical skills:Lab safetyIdentifying risks and hazardsUse of a Bunsen burnerManipulating lab equipmentPlanning an experimentWriting conclusionsEvaluating resultsEvaluating experimental techniquesMathematical skills:Calculations and rearrangingequationsUsing standard formSignificant figures and decimal placesCalculations using moles (H)Calculating numbers of subatomicparticlesCalculating rates of reaction

Rate calculations Literacy Skills Meanings and use of words that are central to understanding scientific	 Constructing vector diagrams to scale Literacy Skills Meanings and use of words that are central to understanding scientific concepts Identifying common prefixes and suffixes 	 Identifying and describing trends Use of positive and negative numbers in relation to calculating energy changes in reactions Literacy Skills Meanings and use of words that are
	 Identifying common prefixes and suffixes to decode keywords 	 Meanings and use of words that are central to understanding scientific concepts Identifying common prefixes and suffixes to decode keywords