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**

KS3		AUTUMN TERM		SPRING TERM		SUMMER TERM	
		TERM 1A	TERM 1B	TERM 2A	TERM 2B	TERM 3A	TERM 3B
YEAR 7	KNOWLEDGE	**Particles:** • States of matter • Changes of state • Heating and cooling curves • Atomic structure • Elements and the periodic table • Compounds and mixtures • Solutions and solubility • Factors affecting solubility • Conservation of mass	**Organisms:** • Microscopes • Plant cells • Animal cells • Specialised cells • Respiration • Breathing • Gas exchange and diffusion • Smoking and vaping • Exercise and asthma • Transport processes	**Forces:** • Introduction to forces • Balanced and unbalanced forces • Forces affecting objects • Contact and non-contact forces •Simple machines • Pressure • Pressure in gases • Pressure in liquids	**Reactions:** • Common acids and alkalis • Concentrated and dilute acids • Indicators • Neutralisation reactions • Writing a lab report: Hypothesis, method, data collection, presenting data and conclusions	**Environment:** • Photosynthesis • Carbon cycle • DNA structure • DNA discovery and history • Extracting DNA • Inheritance • Variation • Drugs and health	**Energy stores and transfers:** • Stores of energy • Transfers of energy • Energy in the home • Energy bills • Conservation of energy • Energy dissipation • Domestic energy diffusion
	SKILLS	**Practical skills:** • Lab safety • Identifying risks and hazards • Identifying lab equipment • Writing Hypothesis **Mathematical skills:** • Calculations and rearranging equations • Identifying anomalies • Drawing graphs • Identifying and describing trends **Literacy Skills:** • Correct meanings and use of words that are central to	**Practical skills:** • Focusing a microscope • Preparing a slide • Measuring heart rate and breathing rate **Mathematical skills:** • Calculations and rearranging equations • Identifying anomalies • Drawing graphs • Identifying and describing trends **Literacy Skills:** • Correct meanings and use of words that are central to	**Practical skills:** • Identifying variables • Writing a conclusion **Mathematical skills:** • Calculations and rearranging equations • Identifying anomalies • Drawing graphs • Identifying and describing trends **Literacy Skills:** • Correct meanings and use of words that are central to understanding scientific concepts	**Practical skills:** • Lab safety • Identifying risks and hazards • Identifying lab equipment • Writing Hypothesis, method and conclusion **Mathematical skills:** • Calculations • Tabulating results • Drawing graphs • Identifying and describing trends **Literacy Skills:** • Correct meanings and use of words that are central to	**Practical skills:** • Lab safety • Identifying risks and hazards • Identifying lab equipment • Identifying variables **Mathematical skills:** • Calculating probability using punnett squares • Creating a timeline of chronological events **Literacy Skills:** • Correct meanings and use of words that are central to	**Practical skills:** • taking measurements • reading scales **Mathematical skills:** • Calculations • Identifying and describing trends • Converting units **Literacy Skills:** • Correct meanings and use of words that are central to understanding scientific concepts • Identifying common prefixes and suffixes to decode keywords

		understanding scientific concepts • Identifying common prefixes and suffixes to decode keywords	understanding scientific concepts • Identifying common prefixes and suffixes to decode keywords	• Identifying common prefixes and suffixes to decode keywords	understanding scientific concepts • Identifying common prefixes and suffixes to decode keywords	understanding scientific concepts • Identifying common prefixes and suffixes to decode keywords	
YEAR 8	KNOWLEDGE	**Effects of forces on objects:** • Forces key concepts recap • Squashing and stretching • Hooke's law • Friction and uses • Gravity • Solar system and the moon • Astronomical cycles • Nuclear fusion and fission • Life cycle of a star	**Organisms- Body and function:** • Diet and digestion • Recap cells and organisation • Digestion • Enzymes in digestion • Muscles • Skeleton • Aerobic and anaerobic respiration • Blood and blood vessels • The heart • Kidneys	**Particles and separating techniques:** • Recap solubility and solutions • Paper chromatography • Crystallisation • Distillation • Identifying pure substances • Physical properties of metals and non-metals • Polymers • Ceramics and composites	**Energy and waves:** • Transverse waves • Longitudinal waves • Reflection • Refraction • Lenses • Colour • Auditory range • Detecting sounds • Heat transfers • Thermal conductors and insulators	**Environment:** • Photosynthesis recap • Specialised plant cells • Food chains and food webs • Energy transfers • Pyramids of biomass and pyramids of number • Natural selection • Biodiversity • Human impacts on biodiversity	**Reactions:** • Physical and chemical reactions • Exothermic and endothermic reactions •Complete and incomplete combustion • Global warming • Recycling • Water cycle • Greenhouse gases
	SKILLS	**Practical skills:** • Lab safety • Identifying risks and hazards • Identifying lab equipment • Writing Hypothesis, method and conclusion **Mathematical skills:** • Calculations and rearranging equations • Identifying anomalies • Tabulating results • Unit conversions	**Practical skills:** • Lab safety • Identifying risks and hazards • Identifying lab equipment • Writing Hypothesis, method and conclusion • Dissection **Mathematical skills:** • Calculations and rearranging equations • Identifying anomalies • Analysing graphs	**Practical skills:** • Lab safety • Identifying risks and hazards • Identifying lab equipment • Writing Hypothesis, method and conclusion **Mathematical skills:** • Calculations and rearranging equations • Identifying anomalies • Drawing graphs	**Practical skills:** • Lab safety • Identifying risks and hazards • Identifying lab equipment • Writing Hypothesis, method and conclusion **Mathematical skills:** • Tabulating results • Identifying anomalies • Drawing graphs • Identifying and describing trends **Literacy Skills:**	**Practical skills:** • Lab safety • Using a microscope • Identifying lab equipment • Writing Hypothesis. method and conclusion **Mathematical skills:** • Calculations • Drawing pyramids • Interpreting graphs • Identifying and describing trends **Literacy Skills:**	**Practical skills:** • Lab safety • Identifying risks and hazards • Identifying lab equipment • Writing Hypothesis. method and conclusion **Mathematical skills:** • word equations and symbol equations • Identifying and describing trends **Literacy Skills:**

		• Drawing graphs • Identifying and describing trends **Literacy Skills:** • Correct meanings and use of words that are central to understanding scientific concepts • Identifying common prefixes and suffixes to decode keywords	• Identifying and describing trends **Literacy Skills:** • Correct meanings and use of words that are central to understanding scientific concepts • Identifying common prefixes and suffixes to decode keywords	• Identifying and describing trends **Literacy Skills:** • Correct meanings and use of words that are central to understanding scientific concepts • Identifying common prefixes and suffixes to decode keywords	• Correct meanings and use of words that are central to understanding scientific concepts • Identifying common prefixes and suffixes to decode keywords	• Correct meanings and use of words that are central to understanding scientific concepts • Identifying common prefixes and suffixes to decode keywords	• Correct meanings and use of words that are central to understanding scientific concepts • Identifying common prefixes and suffixes to decode keywords

YEAR 9	KNOWLEDGE	**Sustainability and Natural Resources** • Non-Renewable Energy Resources • Renewable Resources • Hydrocarbons • Climate Change • Earth's Atmosphere • Ecosystems • Biodiversity • Food Chains and Food Webs • Energy Transfer in Living Organisms • Sustainable Farming • Recycling • Selective Breeding and Genetic Engineering • Fuels • Generating Electricity • Power and Efficiency • Metals Extraction • Reactivity Series • Displacement Reactions • Reactions of Metals with Acids, Oxygen, and Water • Oxidation, Reduction, and Corrosion • Catalysts • Rates of reaction	**Health and Disease** • Communicable Diseases • Non-communicable Diseases • Pathogens • DNA • Inheritance • Genetic Diseases • Mutations • Cancer and Treatments • The Immune System • Allergies • Chemical and Physical Barriers to Infection • Hygiene • Vaccines • Development of Vaccines • Antibiotics and Antibiotic Resistance • Development of Antibiotics • Testing New Medicines • Organ Transplants • Ethics of Medicine • Stem cells and Medical treatments • Human Genome Project • Medical Careers	**Electricity and Magnetism** • Series Circuits • Parallel Circuits • Electrical Current • Potential Difference • Resistance • Charge • Static Electricity • Different types of Resistors • Magnetism • Electromagnetism • Uses of Magnetism **Key skills in Science** • Physics • Chemistry • Biology
	SKILLS	**Practical skills:** • Lab safety • Identifying risks and hazards • Use of a Bunsen burner • Manipulating lab equipment • Planning an experiment • Writing conclusions • Evaluating results **Mathematical skills:** • Calculations and rearranging equations • Using standard form • Significant figures and decimal places • Identifying anomalies • Drawing graphs • Identifying and describing trends **Literacy Skills:**	**Practical skills:** • Lab safety • Identifying and managing biological hazards • Use of a microscope • Manipulating lab equipment **Mathematical skills:** • Calculations and rearranging equations • Using standard form • Significant figures and decimal places • Identifying anomalies • Drawing graphs • Identifying and describing trends **Literacy Skills:**	**Practical skills:** • Lab safety • Identifying risks and hazards • Manipulating lab equipment- including building electrical circuits • Planning an experiment • Writing conclusions **Mathematical skills:** • Calculations and rearranging equations • Using standard form • Significant figures and decimal places • Identifying anomalies • Drawing graphs • Identifying and describing trends **Literacy Skills:**

		• Correct meanings and use of words that are central to understanding scientific concepts • Identifying common prefixes and suffixes to decode keywords **Career Links:** Understanding how science is linked to various	• Correct meanings and use of words that are central to understanding scientific concepts • Identifying common prefixes and suffixes to decode keywords **Career Links:** Understanding how science is linked to various	• Correct meanings and use of words that are central to understanding scientific concepts • Identifying common prefixes and suffixes to decode keywords **Career Links:** Understanding how science is linked to various careers now and in the future