Our Lady Queen of Peace
Catholic High School

Curriculum Overview

YEAR 7 SCIENCE

Careers		
Local Market Information	**Skills**	**Jobs**
Local science starts with testing and observation. In Biology, Ormskirk District General Hospital links to cells, samples and microscopy through NHS lab and clinical work. In Chemistry, Pilkington/NSG at Lathom, near Ormskirk, links to materials testing, particles and glass quality control. In Physics, local manufacturing and healthcare both rely on microscopes, forces, energy and accurate measurement.	**Following instructions** **Positive attitude** **Attention to detail**	Laboratory assistant Quality control technician Healthcare science assistant Materials testing technician

	Knowledge & Understanding			**Subject Specific Literacy Development**	**Cultural Capital / Enrichment Opportunities**
	Topics (Bigger Picture)	**Knowledge (Key Concepts)**	**Recall & Retrieval Practice Focus**	**Key Vocabulary**	
Half Term 1	S1: Becoming a Scientist	Safety in a laboratory. Hazard symbols. Scientific equipment. Variables. Planning and recording investigations. Presenting and Analysing data	Importance of safety rules and hazard symbols Choose and use equipment correctly Selecting variables Data and graphs	Hazard Bunsen burner Equipment Variables Reliability Conclusion	Opportunity to discuss relevant news. Highlighting the relevance and transferability of science for daily and future lives.

	Knowledge & Understanding			Subject Specific Literacy Development	Cultural Capital / Enrichment Opportunities
	Topics (Bigger Picture)	**Knowledge (Key Concepts)**	**Recall & Retrieval Practice Focus**	**Key Vocabulary**	
	C1a: Particle Model of Matter	Particle model of solids, liquids, and gases. Changes of state and the energy involved.	Recall the three states of matter Recall basic properties Use simple particle explanations Changes of state	Solid Liquid Gas Properties State change Melting Boiling Condensation Freezing	Challenging popular stereotypes. Creating opportunities for students to explore STEM activities through practical and encouragement of STEM club. Careers drop in 1 "Did You Know": *"Unexpected Careers in Science."* Careers drop in 2 "Did You Know": *"Science Behind Sport, Gaming and Entertainment"* STEM careers lesson 1 "Science in Everyday Life/Green Careers" Links to the real world within reading for meaning tasks
	B1a: Cell Structure and Microscopy	Structure and function of animal and plant cells. Differences between unicellular and multicellular organisms.	Main parts of a cell Differences between plant and animal cells Multicellular organisms need specialised cells	Organelle Nucleus Cytoplasm Cell membrane Chloroplast Cell wall Vacuole Magnificatiopn	
Half Term 2	P1a: Energy Stores & Transfers	Energy stores and transfers. Conservation of energy. Efficiency and energy dissipation	Types of energy How energy is transferred Conservation of energy	Energy Conservation Energy transfer Chemical energy Conduction	
	C1b: Particle Movement & Solutions	Diffusion, Dissolving and solutions, Factors affecting dissolving, Data handling and analysis	Diffusion Effects of temperature on rate of diffusion	Diffusion Concentration gradient Solution Solute Solvent Solubility Puer substance	
	B1b: Specialisation and Transport	Cell types and organisation, Bacterial cells, Specialised cells, Cell membranes and transport, Diffusion in cells, Data collection and processing, Scientific communication	Adaptations of cell Formation of tissues, organs and systems Diffusion in cells	Adaptation Diffusion	

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Half Term 3	P1b: Thermal energy transfer	Energy transfer by convection, Energy transfer by radiation, Emission and absorption of radiation, Thermal insulation, Reducing energy transfer, Scientific communication and evaluation	Energy transfer by conduction, convection and radiation Particle movement	Convection Radiation Emit Absorb Variables Conclusion	Opportunity to discuss relevant news. Highlighting the relevance and transferability of science for daily and future lives.
	C1c: Mixtures & Separation	Filtration, Evaporation, Crystallisation (implied through evaporation), Distillation, Chromatography, Data collection and recording, Analysis and interpretation	Separating mixtures techniques Properties of substances	Filtration Residue Filtrate Evaporation Crystallisation Distillation Chromatography Chromatogram	Challenging popular stereotypes. Creating opportunities for students to explore STEM activities through practical's. Encourage STEM club. Did you know visit 3
Half Term 4	B2a: Human Reproduction & Development	Puberty and adolescence, Male and Female reproductive systems, Menstrual cycle, Fertilisation, Pregnancy and development, Maternal health and Infant care, Scientific communication	Changes that occur during puberty Ways to stay healthy during puberty Reproductive systems structures and functions	Puberty Hormones Infertility Menstrual cycle Ovulation Fertilisation Foetus Placenta Lifestyle factors Health	Opportunity to discuss relevant news. Highlighting the relevance and transferability of science for daily and future lives. Challenging popular stereotypes. Creating opportunities for students to explore STEM activities through practical's. Careers drop in 3 and 4 "Did You Know": *Medical and Health Science*
	C2a: Atoms, Elements & Compounds	Atoms and elements, Compounds and pure substances, The periodic table, Properties of elements and compounds, Naming compounds and chemical formulae, Scientific communication, Practical investigation	Identify elements and compounds from names/formulae	Atom Element Compound Properties Chemical formula	
Half Term 5	P1c: Energy in the Real World	Power and energy transfer, Units and conversions, Cost of using electrical appliances, Energy resources	Differences between renewable and non-renewable energy Efficiency and	Power Renewable Non-renewable	Challenging popular stereotypes.

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	B2b: Plant Reproduction, Pollination & Seed Dispersal	Structure of a flower, Pollination and fertilisation, Seed formation and germination, Seed dispersal and adaptations, Data collection and recording, Data presentation and	Plant reproduction Adaptations that improve seed dispersal	Carpel Stamen Pollination Germination Dispersal	Creating opportunities for students to explore STEM activities through practical's. Encourage STEM club. Did you know visit 3 Opportunity to discuss relevant news. Highlighting the relevance and transferability of science for daily and future lives. Challenging popular stereotypes. Creating opportunities for students to explore STEM activities through practical's. Careers drop in 3 and 4 "Did You Know": *Jobs*
Half Term 6	C2b: Periodic Table, Metals & Non-Metals	Organisation of the periodic table, Trends and patterns, Metals and non-metals, Classification skills, Prediction and reasoning	Periodic table is organised into groups and periods Properties of metals and non-metals	Periodic table Group Period Metal Non-metal Reactivity	
	P2a: Forces & Motion: Contact, non-contact and Friction	Types of forces, Balanced and unbalanced forces, Resultant force, Friction, Practical investigation, Scientific communication	Different types of forces Calculate or identify resultant force	Force Contact Non-contact Resultant force Variables	
	P2b: Gravity, Weight, Air Resistance & Floating	Gravitational force, Air resistance and parachutes, Density and floating, Floating and sinking, Data collection and recording, Data presentation and analysis	Difference between mass and weight Effects of air resistance Density and weight affect floating and	Mass Weight Air resistance Density Volume	

Key Assessments			
When	**What will be assessed?**	**Why is this being assessed?**	**How will results be stored & students receive feedback?**
Half Term 1	Y7 Science Base line test. BAS End of topic test - **Describe** how a scientist would identify, control and record variables in a boiling water investigation.	To understand starting points for new Y7 students. Accurate use of the command word **Describe.** To assess students' understanding of Working Scientifically skills, specifically their ability to: • Identify independent, dependent and control variables. • Explain how variables are managed to ensure a fair test. • Describe how scientific data is collected and recorded accurately. • Apply knowledge of variables to a practical investigation context. This assessment will help identify students' readiness to plan and carry out scientific investigations independently.	SIMs marksheet. Whole class feedback. SIMs marksheet. Teacher marked with WWW and EBI on green sheet.

Half Term 2	The Mid-Year Exam will assess content covered in the year so far, from biology (cells), chemistry (particle model), and physics (energy stores/transfers) and science skills, safety in the lab, variables etc (from the becoming a scientist topic).
	Biology – Cells End of topic test - **Describe** the functions of the organelles of typical plant and animal cells.
		To assess students' understanding of Biology, Chemistry and Physics topics and working scientifically skills, specifically their ability to:
		• Identify independent, dependent and control variables.
		• Recall and apply knowledge about:
		  ○ Cell structure, type, specialisation, using microscopes and transport in cells.
		  ○ Particle model, changing state, density
		  ○ Energy stores & transfers, conduction
		To assess students understanding of cellular organelles and their functions.
		Accurate use of the command word **Describe.**
			SIMs marksheet.
			Whole class feedback.
			
			SIMs marksheet.
			Teacher marked with WWW and EBI on green sheet.

Half Term 3	Chemistry – Particles & Mixtures End of topic test – **Explain** how the arrangement and motion of particles in the three states of matter link to their properties.	To assess students understanding of how energy is stored & transferred in an everyday situation. To assess students understanding of how the properties of solids, liquids and gases relate directly to their arrangement and motion. Accurate use of the command word **Explain.**	SIMs marksheet. Teacher marked with WWW and EBI on green sheet.
Half Term 4	In class assessment – 4-6 short command word-based questions.	To assess students' understanding of thermal energy transfers, human reproduction and atoms/elements.	SIMs marksheet. Teacher marked with WWW and EBI on green sheet.
Half	End of Year Exam (Summative	To assess students' understanding of Biology, Chemistry and Physics topics and working	SIMs marksheet.

Term 5	Assessment) will assess knowledge and skills from the topics covered to this point, including scientific skills.
	Biology - Reproduction – End of topic test. **Explain** how a human baby is produced and develops before birth.
	Physics – Energy End of topic test – **Explain** how energy is stored, transferred, and conserved when a ball is dropped.
		scientifically skills, specifically their ability to:
		• Identify variables.
		• Recall and apply knowledge about:
		  ○ Cells, Human reproductive system and puberty.
		  ○ Particle model, atoms, elements & compounds.
		  ○ Energy stores & transfers, forces.
		
		To assess students understanding of how the human reproductive systems lead to the growth and development of a baby.
			Teacher marked with WWW and EBI on green sheet.

Half Term 6	Chemistry – Substances End of topic test - **Explain** why sodium, oxygen, and sodium oxide have different properties. Physics – Forces & Motion End of topic test - **Explain** how a parachute can be designed to increase air resistance and reduce falling speed.	To assess students understanding of atoms and elements can be combined and how this changes the properties of substances. To assess students understanding of how forces such as air resistance affect the motion of objects and what we can do affect the force.	SIMs marksheet. Teacher marked with WWW and EBI on green sheet.