

Our Lady Queen of Peace

Catholic High School

Curriculum Overview

YEAR 8 SCIENCE

Careers		
Local Market Information	Skills	Jobs
Biology links to NHS health and Liverpool School of Tropical Medicine: disease prevention and lifestyle advice through local GP services and Ormskirk Hospital. Chemistry links to P&G Skelmersdale, where product supply, quality, safety and manufacturing processes are part of their major Consumer Goods operation. Physics links strongly to Jodrell Bank, as we explore space, waves, telescopes and signals.	Teamwork Communication Learning New Skills	Healthcare assistant; manufacturing/process technician; engineering technician; science communicator; astro physicist

	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	S2: Becoming a Scientist	Planning a scientific investigation. Independent, dependent and control variables. Collecting repeat measurements. Calculating mean values. Presenting data using tables and graphs. Drawing conclusions and evaluating methods.	Laboratory safety. Hazard symbols. Choosing equipment. Identifying variables. Results tables. Graph conventions from Y7.	Variable Reliability Conclusion	Opportunity to discuss relevant news. Highlighting the relevance and transferability of science for daily and future lives.
	B3a: Human Body Organisation & Movement	Structure and function of major systems: circulatory, respiratory, digestive, skeletal and muscular systems.	Basic parts of the body and that different systems have specific functions.	Cell Tissue Organ Organ system	Creating opportunities for students to explore STEM activities through practical and encouragement of STEM/ Science club.
	C3a: Chemical Reactions and Acids	Identifying reactants and products in word equations Conservation of mass in chemical reactions Observing and interpreting evidence of chemical change (e.g., colour change, gas production, temperature change) Properties of acids and alkalis pH scale and indicators	Substances can change during reactions to form new substances. Materials are not lost but can change form. Visible signs of chemical reactions	Chemical reaction Physical change Conservation of mass Acid Alkali Indicator Effervescence Neutralisation	Careers drop in 1 "Did You Know": "Unexpected Careers in Science."

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Half Term 2	P3a: Current, Components and Circuit Design	Identifying and knowing the use of the following components: cell, battery, bulb, switch, resistor, ammeter, voltmeter Series and parallel circuits: structure and behaviour.	That electricity flows in a complete circuit. That circuits can be arranged in different ways.	Circuit Current Parallel circuit Branch	Careers drop in “Did You Know”: “ <i>Science Behind Sport, Gaming and Entertainment</i> ” STEM careers lesson 1 “Science in Everyday Life/Green Careers” Careers links/ spotlights in each topic.
	B3b: Nutrition, Digestion & Gas Exchange	Balanced diet and the role of nutrients (carbohydrates, proteins, fats, vitamins, minerals, water, and fibre) Digestive system organs and their functions Enzymes and their role in digestion Gas exchange in the lungs	Know that the body needs a range of nutrients to stay healthy. Breathing involves oxygen entering and carbon dioxide leaving the body.	Digestion Enzymes Nutrition Ventilation Inhalation Exhalation	
Half Term 3	C3b: Reaction Types	Oxidation and Reduction Combustion Decomposition Precipitation	Know that burning involves reacting with oxygen. That some materials can break down into simpler substances.	Oxidation Reduction Combustion Deposition Precipitation	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 and encouragement of STEM/ Science club.
	P3b: Potential Difference, Resistance & Static Electricity	Current and potential difference (voltage) Measuring current (A) and voltage (V) Resistance and its effect on current	Electricity involves movement of charge. The electrical quantities can be measured.	Potential difference Resistance Charge	
	B3b: Health, Lifestyle & Disease	Effects of lifestyle factors (diet, exercise, drugs, alcohol, smoking) Communicable and non-communicable diseases	Know that lifestyle choices affect health. That illness can spread or develop in different ways.	Non-communicable Drug Stimulant Depressant Nicotine	
Half Term 4	B3b: Health, Lifestyle & Disease	Immune system basics and the role of vaccines	Know how the body can defend itself against illness.	Pathogen Hygiene	Careers drop in 3 and 4 “Did You Know”: <i>Medical and Health Science Careers, & Women and Diversity in STEM.</i>

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	P3c: Magnetism & Electromagnetism	Magnetic materials and poles Attraction and repulsion Drawing and interpreting magnetic field lines Making an electromagnet Factors affecting strength of electromagnets Uses of electromagnets	That which materials are magnetic. That magnets can pull or push. How electricity can create magnetism.	Attract Repel Magnetic field Electromagnet Solenoid Variables	Termly STEM Lesson 2 – Career pathways (link to STEM week) Careers links in each topic Career links in reading for meaning tasks
Half Term 5	B4a: Photosynthesis: How Plants Make and Use Glucose	Word equation for photosynthesis Role of chlorophyll and light energy Structure and function of leaves (adaptations for photosynthesis) Importance of photosynthesis for oxygen production and as the basis of food chains Factors affecting the rate of photosynthesis	That plants need light to grow. That plant parts have different functions. That plants are important for life.	Photosynthesis Stomata Glucose Starch Variables	Opportunity to discuss relevant news. Highlighting the relevance and transferability of science for daily and future lives.
	C4a: Earth Materials & the Rock Cycle	Layers of the Earth and composition Tectonic plates and their movement Rock cycle Types of rocks: igneous, sedimentary, metamorphic Formation processes and examples	Grouping of rocks That rocks form in different ways.	Continental drift Sedimentary rock Igneous rock Metamorphic rock	Challenging popular stereotypes. Creating opportunities for students to explore STEM activities through practical and encouragement of STEM/ Science club.
	B4b: Respiration: How Cells Release Energy	Word equation for aerobic respiration Purpose of respiration Differences between aerobic and anaerobic respiration Anaerobic in animals and plants Oxygen debt and recovery	That the body releases energy from food. That living things need energy. That the body needs recovery after exercise.	Aerobic respiration Mitochondria Conclusion Anaerobic respiration Fermentation	Careers drop in 3 and 4 “Did You Know”: <i>Jobs That Didn't Exist 10 Years Ago</i> ”&” <i>Science Careers Making a Global Difference.</i> ”

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Half Term 6	C4b: The Atmosphere, Climate Change & Human Impact	Composition of the atmosphere: Evolution of the atmosphere: Greenhouse effect and climate change Air pollution and its effects:	That air is made of different gases. That Earth has changed over time. That the Earth is warmed by the Sun. that human activity can affect the environment.	Ore Alloy Corrosion Composite Polymer Atmosphere Climate change Greenhouse gas	Termly STEM Lesson 3 – Future Technologies and STEM Careers. Careers links in each topic Intentions to run a school trip to Jodrell Bank as an employer encounter and opportunity to see how local scientists explore space.
	P4a: Space	Structure of the solar system Orbits and gravity Day, Night, and Seasons Phases of the Moon Space Exploration	That objects can move due to forces. That time changes across a day. That the Moon changes appearance.	Galaxy Universe Solar system Celestial body Orbit Hemisphere Satellite	

Key Assessments

When	What will be assessed?	Why is this being assessed?	How will results be stored & students receive feedback?
Half Term 1	In class assessment – 4-6 short command word-based questions.	To assess students' understanding of human body and chemical reactions.	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 (body), chemistry (reactions), and physics (electricity) and science skills, safety in the lab, variables etc (from the becoming a scientist topic), fundamental knowledge from Y7 will also be assessed, (Summative assessment)	To assess students' understanding of Biology, Chemistry and Physics topics and working scientifically skills, specifically their ability to: - Identify variables. - Recall and apply knowledge about: - Organisation and movement of the body - Chemical/physical reactions, acids and alkalis - Electrical components and circuits.	SIMs marksheet. Whole class feedback.
Half Term 3	Chemistry – Chemical reactions -End of topic test <u>Explain</u> what happens when hydrochloric acid reacts with a metal and why this is a chemical reaction.	To assess students understanding of how chemical reactions occur.	SIMs marksheet. Teacher marked with WWW and EBI on green sheet.
Half Term 4	Biology – Health, Lifestyle & Disease – End of topic test Explain how the body's organ systems work together to keep a person healthy. Physics – Electricity & Magnetism – End of topic test <u>Explain</u> how electricity and magnetic fields work.	To assess students understanding of how the body works and how to maintain our health. To assess students understanding of different types of magnets and their uses.	SIMs marksheet. Teacher marked with WWW and EBI on green sheet.
Half Term 5	End of Year Exam (Summative Assessment) will assess knowledge and skills from the topics covered to this point, including scientific skills and fundamental knowledge from Y7. Biology – Photosynthesis & Respiration – End of topic test Compare photosynthesis and respiration and explain why both processes are essential for life.	To assess students' understanding of Biology, Chemistry and Physics topics and working scientifically skills, specifically their ability to: - Identify variables. - Analyse information/data. - Recall and apply knowledge about: - Body & Health - Photosynthesis - Chemical reactions - Circuits, magnets. To assess students understanding of photosynthesis and respiration.	SIMs marksheet. Whole class feedback. SIMs marksheet. Teacher marked with WWW and EBI on green sheet.
Half Term 6	Chemistry – Earth & Atmosphere – End of topic test Compare how natural processes and human activities change the Earth. Physics – Space – End of topic test Compare different celestial bodies and explain how they are organised within the universe	To assess students understanding of the processes of the earth and atmosphere.	SIMs marksheet. Teacher marked with WWW and EBI on green sheet.