



Our Lady's Catholic College

KS3 Science Curriculum Overview

Our Lady's Catholic College, Morecambe road, Lancaster, La12rx

Year 7	Autumn	Passport to Science 1. Lab safety 2. Using a Bunsen burner 3. Lab equipment 4. Carrying out an investigation safely 5. Planning an investigation Know <i>The safety rules that must be followed within a lab</i> Know how <i>Reading scales</i> <i>Hazards and risks</i> <i>Identifying variables</i> <i>Presenting data</i>	Particle Model 1. Solids, liquids and gases (properties) 2. Particles 3. Making a hypothesis 4. Brownian motion 5. Diffusion 6. Air pressure Know <i>The properties of solids, liquids and gases</i> <i>The particle theory</i> Know how <i>Making a hypothesis</i> <i>Converting units</i> <i>Calculating volumes</i>	Forces and Motion 1. Different forces 2. Springs 3. Friction 4. Pressure 5. Balanced and unbalanced forces Know <i>The properties of different forces</i> <i>Understand balanced and unbalanced forces</i> Know how <i>Conventions for communication</i> <i>Taking notes</i> <i>SI system</i>	Ecosystems 1. Variation 2. Measuring variation 3. Relationships in data 4. Adaptations 5. Causes of variation 6. Food chains and webs 7. Transfers in food chains Know <i>The importance and causes of variation.</i> <i>That energy is transferred in food chains</i> Know how <i>Different types of graphs</i> <i>Paragraph structures, topic sentences</i>
	Spring	Energy 1. Energy from food 2. Energy transfers and stores 3. Fuels 4. Other energy resources Know <i>Energy transfers and stores</i> Know how <i>Interpreting graphs</i> <i>Spotting trends in data</i> <i>Problem solving of force diagrams</i> <i>Researching a topic</i>	Cells, tissues, organs and systems 1. Life processes 2. Organs 3. Tissues 4. Microscope – plant cells 5. Microscope – animal cells 6. Organelles 7. Organ systems Know <i>The importance of all life processes and the roles organs play within each organ system</i> <i>The structure and function of plant and animal cells</i> Know how <i>Microscopes and drawing</i>	Atoms, Elements and Compounds 1. Sorting and presenting data 2. Atoms and molecules 3. Elements 4. Making a compound 5. Chemical reactions - two elements 6. Using Molymods 7. Signs of chemical reactions 8. Thermal decomposition 9. Explaining differences between A, E, C, M Know <i>The properties of atoms, elements and compounds</i>	Animal Reproduction 1. Scientific method and ideas 2. Gametes and fertilisation 3. The reproductive system 4. Becoming pregnant 5. Gestation and birth 6. ACE assessed task 7. Puberty 8. The menstrual cycle Know <i>The structure and function of the male and female reproductive system</i> Know how <i>Size of cells and embryo</i> <i>Recognising relationships</i>

			<i>Conventions in writing</i> <i>Magnification and scales</i>	Know how <i>Tables, graphs, pie charts</i> <i>Observations from practical</i> <i>Using apparatus (delivery tube)</i> <i>Use of models in science</i>	<i>Extended writing opportunities</i>
	Summer	Mixtures and Separations 1. Mixtures 2. Solutions 3. Evaporation 4. Chromatography 5. Distillation Know <i>The processes of separating mixtures</i> Know how <i>Flow charts</i> <i>Conventions and symbols</i> <i>Presenting and interpreting data</i>	Current Electricity 1. Circuit symbols and basic concepts 2. Investigating circuits 3. Models of electric current 4. Series and parallel circuits 5. Current in a wire investigation 6. Changing the current (voltage) 7. Using electricity (safety) Know <i>The circuit symbols and differences between series and parallel circuits</i> Know how <i>Using tables to display data</i> <i>Relationships from graphs</i> <i>Building circuits</i> <i>Investigating circuits</i> <i>Recording data</i>	Acids & Alkalis 1. Hazards 2. Indicators 3. Evaluating indicators 4. Acidity and alkalinity 5. Neutralisation 6. Making a salt 7. Acids and bases 8. Indigestion remedies Know <i>The hazard symbols and what they mean</i> <i>The properties of acids and bases</i> Know how <i>Writing equations</i> <i>Making and recording observation</i> <i>Creating your own indicator</i> <i>Improving awareness of health and safety</i>	
	Autumn	Sound 1. Making sounds 2. Moving sounds	Muscle & Bones 1. Muscles and breathing 2. Muscles and blood	Combustion 1. Burning fuels 2. Oxidation 3. Fire safety	Light 1. Light travelling 2. Reflection

Year 8		3. Line graphs 4. Detecting sounds 5. Using sounds 6. Waves Know <i>Different sources of sound and features of waves</i> <i>How we use and detect sound</i> Know how <i>Investigating pitch</i> <i>Drawing sound waves</i> <i>Drawing bar graphs</i> <i>Identifying different graphs of sound</i>	3. Skeleton 4. Muscles and moving 5. Drugs 6. Scientific Questioning Know <i>The structure of the body and how the musculoskeletal system operate</i> <i>The affect drugs have on the body</i> Know how <i>Calculate breathing and heart rate</i> <i>Plan an investigation for a scientific question</i> <i>Writing up an investigation</i>	4. Air pollution 5. Global warming 6. Control variables Know <i>What combustion and fuels are</i> <i>Oxidation reactions</i> <i>How pollution is being produced and how it contributes to global warming</i> Know how <i>Control variables</i> <i>Writing equations</i> <i>Interpreting and explaining data</i>	3. Refraction 4. The eye 5. White light dispersion 6. Filters and seeing colours Know <i>The properties of light and what occurs during reflection and refraction</i> <i>That white light is made up of all colours and the role of filters in what we see</i> Know how <i>Drawing light rays & measuring angles</i> <i>Investigating reflection</i> <i>Investigating refraction</i> <i>Labelling diagrams</i>
	Spring	Food & Nutrition 1. Nutrients 2. Food tests 3. Balanced diets 4. Digestion 5. Small intestine and its adaptations Know <i>What a balanced diet is and what each nutrient is used for</i>	Energy Transfers 1. Temperature changes 2. Transferring energy 3. Accuracy and precision 4. Controlling transfers 5. Power and efficiency 6. Paying for energy Know	Fluids 1. The particle model 2. Density 3. Changing state 4. Pressure in fluids 5. Floating and sinking 6. Drag Know	Plants and Reproduction 1. Classification and biodiversity 2. Sampling 3. Pollination 4. Fertilisation and dispersal 5. Germination and growth 6. Photosynthesis

		<i>What a deficiency in a particular nutrient can lead to</i> <i>The digestive system and each organs function</i> Know how <i>Calculating SA:V</i> <i>Qualitative analysis (food tests)</i> <i>Facts/opinion/bias</i> <i>Models (Visking tubing)</i>	<i>That temperature is a measure energy and what affects the rate of energy transfer</i> <i>That energy transfers can be controlled and how this related to power and efficinecy</i> Know how <i>Accuracy and precision</i>	<i>That particles are arramged in different states and what happens when changing state</i> <i>That a substance’s density is related to their abilty and float</i> <i>That speed ands surface area are related to the amount of drag force</i> Know how <i>Calculating and measuring volume, calculating density, rearranging equations</i> <i>Drawing and interpreting cooling curve graphs</i>	7. Asexual reproduction Know <i>The classification of living organisms</i> <i>The process of plant reproduction and the role of each part of the plant in it</i> Know how <i>Testing leaves for starch</i> <i>Classifying plants</i>
	Summer	Space & Magnetism 1. The moon 2. Exploring space 3. Seasons 4. Magnetic earth 5. Gravity in space 6. Beyond the solar system 7. Electromagnets Know <i>The composition of the solar system</i> <i>That gravity causes bodies to orbit and how it is related to maths</i>	Health & Disease 1. Diseases 2. Healthy Lifestyle 3. Smoking 4. Spread of disease 5. Unicellular Organisms 6. Semelweis Know <i>The properties of fungi and bacteria</i> <i>The ways in which diseases are spread by unicellular organisms</i> Know how <i>Analysing and explaining graphs</i>		

		Know how <i>Interpreting data</i> <i>Rearranging and solving equations</i> <i>Producing information in a timeline</i> <i>Investigating magnetic fields using a compass</i>	<i>Presenting scientific findings to a group verbally</i>		
Year 9	Autumn	Forces & Motion 1. Forces affecting movement 2. Resultant forces 3. Energy transfers and efficiency 4. Kinetic energy and gravitational potential energy 5. Speed distance and time 6. Distance time graphs 7. Turning forces 8. Work and machines Know <i>The properties of forces and understand distance time graphs</i> Know how <i>Resolving forces</i> <i>Calculating speed</i> <i>Analysis and drawing graphs</i> <i>Evaluating forces in equilibrium</i>	Periodic Table & Trends 1. Periodic table 2. Properties of metals 3. Periodic trends of metals and non metals 4. Metals and water 5. Rusting 6. Displacement reactions 7. Metals and acids 8. Exothermic and endothermic 9. Measuring the rate of reaction Know <i>The properties of different metals</i> <i>Understand displacement</i> Know how <i>Identifying physical and chemical changes</i> <i>Relating observations to reactant</i> <i>Calculating percentage changes</i>	Genetics and Evolution 1. Environmental variation 2. Inherited variation 3. Probability 4. DNA 5. Genes and extinction 6. Natural selection Know <i>The differences between inherited and environmental variation</i> <i>The role of genes in natural selection</i> Know how <i>Probability</i>	Earth and its Resources 1. Rock cycle 2. Fossil Fuels 3. Crude Oil and Fractions 4. Polymers 5. Modifying polymers 6. Comparing materials 7. Ores and mining 8. Fossil fuel pollution 9. Recycling Know <i>The properties of rocks and polymers and the main ways to recycle materials</i> Know how <i>Synthesis composite materials</i> <i>Investigating the properties of a material</i> <i>Describing and explaining trends in data and graphs</i>

		Breathing and Respiration 1. Aerobic respiration 2. Gas exchange system and breathing 3. Explaining breathing 4. Exercise, smoking and asthma 5. Anaerobic respiration Know <i>The process of aerobic and anerobic respiration and its equation</i> Spring <i>The process of breathing and how exercise, smoking and asthma affects breathing</i> Know how <i>Writing word equations</i> <i>Relating models to life processes</i> <i>Using means and ranges</i> <i>Relating knowledge to unknown examples</i> <i>Analysing and explaining graph</i>	B1 1. Microscopes and biological drawing 2. Size and units 3. Plant and animal cells (CP1) 4. Specialised cells 5. Bacterial cells 6. Enzymes 7. Enzyme action 8. Factors affecting enzymes (CP2) Know How a light and electron microscope work and to understand the differences between magnification and resolution The organelles of eukaryotic and prokaryotic cells and how they are related to their function The function of enzymes and what factors affect enzyme activity Know how To use a light microscope to view eukaryotic cells To use the magnification calculation To explain why specialised cells are adapted to their function		
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	Summer	Know How particles are arranged in different states and the properties of each state The practical set-up needed to separate different types of mixtures Know how To separate different types of mixture in a laboratory			