

CURRICULUM MAP – Year 10 TRIPLE SCIENCE

Each topic will cover the key enquiry processes, relevant maths skills and cultural capital.

CL = Careers Links which supports the Catholic Social Teaching (CST) strand of Dignity of Work and Participation



**ST JAMES'**  
CATHOLIC HIGH SCHOOL

KEY  
Biology  
Chemistry  
Physics

HT1:	HT2:	Assessment TD1	HT3:	HT4:	Assessment TD2	HT5 – OVERLAPS WITH HT6	HT6 – OVERLAPS WITH HT5	Assessment TD3
<p><b>INTENT</b> <a href="#">Particle Model of Matter 6.3</a> We learn how the particle model is widely used to predict the behaviour of solids, liquids and gases (gas pressure) and how this has many applications in everyday life.</p> <p><b>Link to KS3 forces, fluids and solids, liquids and gases</b></p> <p>CL- Deep Sea Diver, Materials Engineer, Jeweller.</p> <p><a href="#">Cell Biology 4.1</a> We explore how structural differences between types of cells enables them to perform specific functions within the organism. We learn about</p>	<p><b>INTENT</b> <a href="#">Quantitative Chemistry 5.3</a> We use quantitative analysis to determine the formulae of compounds and the equations for reactions. We learn about yield and atom economy.</p> <p>CL- Pharmacist and Chemical Engineer.</p> <p><a href="#">Chemical Changes 5.4</a> We learn about the extraction of important resources from the earth and the way that some elements and compounds react with each other and how easily they can be 'pulled apart'. We also learn about titrations.</p> <p><b>CST – Dignity in the</b></p>	<p>Students will be assessed by a series of end of topic tests and completion of the required practical booklet.</p>	<p><b>INTENT</b> <a href="#">Bioenergetics 4.4</a> We explore how plants harness the Sun's energy in photosynthesis in order to make food. We also explore aerobic vs anaerobic respiration.</p> <p><b>CST – Solidarity: Our need for oxygen and how trees and plants are essential to this but we disturb this balance through deforestation and farming methods.</b></p> <p><b>Link to balancing equations in 5.3 and links to Geography: Tropical Rainforests</b></p> <p>CL- Farmer, Gardener, Sports Athlete.</p> <p><a href="#">Atomic Structure 6.4</a> We revisit the structure of the atom and how this links to</p>	<p><b>INTENT</b> <a href="#">Infection and Response 4.3</a> We study the pathogens which cause infectious disease in plants and animals. We also learn about monoclonal antibodies.</p> <p><b>Link to History Vaccines, Jenner, Smallpox, antibiotics Florey and Chain, antiseptics, Louis Pasteur, Fleming</b></p> <p><b>Link to photosynthesis in 4.4 when looking at plant diseases</b></p> <p>CL- Pathologist, Doctor, Lab researcher.</p> <p><a href="#">Energy Changes 5.5</a> We learn that energy changes are an important part of chemical reactions. The interaction of particles often involves transfers of energy due to the breaking and formation</p>	<p>Students will be assessed by a series of end of topic tests and completion of the required practical booklet.</p>	<p><b>INTENT</b> <a href="#">Ecology 4.7</a> In this section we will explore how humans are threatening biodiversity as well as the natural systems that support it. We also learn the factors which speed up the rate of decay and sustainable food production.</p> <p><b>Delivered in the warmer months for fieldwork</b></p> <p>CL- Ecologist, Marine Biologist, Conservationist, Sustainability Officer.</p> <p><a href="#">Rate and Extent of Chemical Change 5.6</a> We learn that whilst the reactivity of chemicals is a significant factor in how fast chemical reactions proceed, there are many variables that can be</p>	<p><b>INTENT</b> <a href="#">Ecology 4.7</a> In this section we will explore how humans are threatening biodiversity as well as the natural systems that support it. We also learn the factors which speed up the rate of decay and sustainable food production.</p> <p><b>Delivered in the warmer months for fieldwork</b></p> <p>CL- Ecologist, Marine Biologist, Conservationist, Sustainability Officer.</p> <p><a href="#">Rate and Extent of Chemical Change 5.6</a> We learn that whilst the reactivity of chemicals is a significant factor in how fast chemical reactions proceed, there are many variables that can be</p>	<p>Students will be assessed by a series of end of topic tests and completion of the required practical booklet.</p>

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<p><b>culturing microbes.</b></p> <p><b>Link to particles</b> <b>Link to History</b> <b>HT2 Stem Cells</b> <b>Health and the People</b></p> <p><b>CST –</b> <b>Dignity: Stem cell research form embryos encourages loss of life.</b> <b>Creation and Environment: Life begins from a fertilized egg cell.</b></p> <p><b>CL – Animal Technician, Biologist, Botanist, General Practitioner (GP), Hospital Doctor, Pharmacologist.</b></p> <p><b><u>Bonding, Structure and Properties of Matter 5.2</u></b> <b>We use theories of structure and</b></p>	<p><b>workplace and participation: Miners in LEDCs being exploited and poor safety.</b></p> <p><b>Link to ionic bonding in 5.2</b></p> <p><b>CL- Quarry Engineer, Geoscientist.</b></p> <p><b><u>Organisation 4.2</u></b> <b>We learn about the human digestive system which provides the body with nutrients and the respiratory system that provides it with oxygen and removes carbon dioxide. We will also learn how the plant's transport system is dependent on environmental conditions to ensure that leaf cells are provided with what they need for</b></p>	<p><b>ionising radiation. Nuclear fission/fusion.</b></p> <p><b>Recap bonding and DNA from cell biology</b></p> <p><b>CL- Medical Physicist, Radiographer, Radiation Protection Practitioner.</b></p> <p><b><u>Quantitative Chemistry 5.3</u></b> <b>We use quantitative analysis to determine the formulae of compounds and the equations for reactions. We learn about yield and atom economy.</b></p> <p><b>CL- Pharmacist and Chemical Engineer.</b></p>	<p><b>of bonds. We learn about chemical cells and fuel cells.</b></p> <p><b>Link to bioenergetics as examples of endothermic and exothermic reactions</b></p> <p><b>CL- Energy engineer</b></p> <p><b><u>Atomic Structure 6.4</u></b> <b>We revisit the structure of the atom and how this links to ionising radiation. Nuclear fission/fusion.</b></p> <p><b>Recap bonding and DNA from cell biology</b> <b>Links to the teaching of Russia in Humanities due to the radiation poisoning of Litvinyenko.</b></p> <p><b>CL- Medical Physicist, Radiographer, Radiation Protection Practitioner.</b></p>	<p><b>manipulated in order to speed them up or slow them down. We learn that some reactions are reversible and the yield can vary depending on the conditions.</b></p> <p><b>Link to energy changes</b> <b>Link to organisation (enzymes as catalysts)</b> <b>Link to limiting factors in Bioenergetics</b></p> <p><b>CL- Pollution Prevention Control Officer, Chemical Engineer, Chemical Technician, Materials Scientist.</b></p> <p><b><u>Waves 6.6</u></b> <b>We learn how waves carry energy from one place to another and how they carry information, including deflection of waves and sound waves.</b></p> <p><b>Link to atomic structure and taught</b></p>	<p><b>manipulated in order to speed them up or slow them down. We learn that some reactions are reversible and the yield can vary depending on the conditions.</b></p> <p><b>Link to energy changes</b> <b>Link to organisation (enzymes as catalysts)</b> <b>Link to limiting factors in Bioenergetics</b></p> <p><b>CL- Pollution Prevention Control Officer, Chemical Engineer, Chemical Technician, Materials Scientist.</b></p> <p><b><u>Waves 6.6</u></b> <b>We learn how waves carry energy from one place to another and how they carry information, including deflection of waves and sound waves.</b></p> <p><b>Link to atomic structure and taught</b></p>
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<p><b>bonding to explain the physical and chemical properties of materials including nanoparticles.</b></p> <p>CL- Materials Engineer, Nanotechnologist, Research and Development Manager.</p> <p>CST – Peace: Use of oil to make polymers leads to conflict and impacts on the environment.</p> <p><u>Atomic Structure and the Periodic Table 5.1</u> We learn how the arrangement of elements in the modern periodic table (including transition elements) can be explained in terms of atomic</p>	<p><b>photosynthesis.</b></p> <p>CST – Options for the poor: Poor diet has an impact on health e.g. heart disease.</p> <p>CL- Dietitian, Cardiologist, Vet, Nutritionist, Phlebotomist, Surgeon.</p> <p><u>Energy 6.1</u> For the students to look at the different types of energy store, observe in everyday examples how they can be transferred and calculated and investigate the main energy resources.</p> <p>CST – Option for the poor – Cheaper methods of energy production. Solidarity – Sustainable resources for the</p>					<p><b>Link to atomic structure and taught before 5.9</b> <b>Link to Seismic Waves in Geography</b></p> <p>CL- Audiologist, Acoustic Engineer, Seismologist, Optometrist, Sound Engineer, Lightning Designer.</p>	<p><b>before 5.9</b> <b>Link to seismic waves in Geography</b></p> <p>CL- Audiologist, Acoustic Engineer, Seismologist, Optometrist, Sound Engineer, Lightning Designer.</p>	
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<p>structure which provides evidence for the model of a nuclear atom with electrons in energy levels.</p> <p>CST – Dignity in the workplace: Extraction of rare earth resources for a developing market. Common good: Using chemicals to make new products to help improve mankind</p> <p>Link to particles</p> <p>CL- Research Scientist, Chemist.</p>	<p>future. Creation and the environment – reducing carbon footprint</p> <p>Link to KS3 energy resources and Geography</p> <p>CL- Energy Engineer, Oceanographer, Hydrologist.</p> <p><u>Electricity 6.2</u> We learn about electrical charge and current in series and parallel circuits. We also learn about the domestic uses of electricity and how it is supplied. We study static electricity.</p> <p>Link to electrons in 5.1 CST – Creation and environment – safe disposal of batteries.</p>							
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	<p>Solidarity – reducing reliance of fossil fuels. Options for the poor – Use of renewable energy resources where once established take little money to run.</p> <p>CL- Electrical Engineer.</p>							
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