

Year 11 Science Learning Programme 4

<p>The LORIC skill focus for this LP is: INITIATIVE. The Moral Values foci for this LP are: INTEGRITY and GRATITUDE.</p> <p>Integrity - Having strong moral principles. I will show integrity by taking responsibility for my actions. Gratitude - Feeling and expressing thanks. I will show gratitude by saying please and thank you.</p> <p>What will I be learning about in this Learning Programme? In this learning program, you will study how electricity can be used to break down substances through electrolysis, including what happens at each electrode and how this process is used in industry. You will explore energy changes in chemical reactions, looking at exothermic and endothermic processes, reaction profiles and simple bond energy calculations. You will also learn about rates of reaction, how different factors change reaction speed, and how reversible reactions reach equilibrium. Finally, you will study hydrocarbons, how crude oil is separated by fractional distillation, and how fuels burn or are cracked to make useful products.</p> <p>Where have I seen this learning before? You've seen this learning before in earlier chemistry topics, like when you studied ions and bonding, particle theory, combustion and fossil fuels. Electrolysis links back to your work on ionic substances and conductivity. Energy changes connect to KS3 lessons on combustion and temperature change. Rates of reaction build on particle collisions you learned earlier, and reversible reactions link to your work on changes of state. Hydrocarbons connect to your previous lessons on fuels and their environmental impact.</p> <p>What could I use it for? You can use this learning to understand how real chemical processes work in industry, from extracting metals to making fuels and managing reaction conditions safely and efficiently. It helps you make sense of everyday ideas like energy changes, combustion, batteries, and the materials we rely on. These topics also build the foundation for future science courses and careers linked to engineering, manufacturing, healthcare, environmental science and any job that involves problem-solving, analysis or understanding how substances behave and change.</p>		<p>Literacy Non-Negotiables:</p> <ul style="list-style-type: none"> Capital letters must be used at the start of sentences and for the first letter of proper nouns Full stops must be used at the end of a sentence Question marks must be used at the end of a question Apostrophes should only be used for possession or omission Days of the week and months must be spelled correctly Key words must be spelled correctly Vocabulary to be taught using the Frayer model
<p>In LP4.1, I will know:</p> <p>How to apply science knowledge under exam conditions. How to manage time effectively in long-answer and calculation questions. How to review answers to identify strengths and gaps.</p>	<p>09/03/26 - (WK 2)</p> <p>Frayer Model Words</p> <p>Conditions</p>	<p>Homework</p> <p>SPARX Science</p>
<p>In LP4.2, I will know:</p> <p>IGNITION What electrolysis is and how ions move to electrodes in molten and aqueous solutions. How oxidation and reduction occur at electrodes, including predicting products. How electrolysis is used industrially, including aluminium extraction and gas testing</p>	<p>16/03/26 - (WK 1)</p> <p>Frayer Model Words</p> <p>Ions</p>	<p>Homework</p> <p>SPARX Science</p>
<p>In LP4.3, I will know:</p> <p>How exothermic and endothermic reactions transfer energy and change temperature. How reaction profiles show activation energy and overall energy change. How to use bond energies to calculate whether reactions release or absorb energy.</p> <p>Extended Task.</p>	<p>23/03/26 - (WK 2)</p> <p>Frayer Model Words</p> <p>Bond</p>	<p>Homework</p> <p>SPARX Science</p>
<p>In LP4.4, I will know:</p> <p>How particle collisions explain rate of reaction and how rate can be measured. How temperature, concentration, pressure, surface area and catalysts affect rate. How reversible reactions reach dynamic equilibrium and how conditions shift it.</p>	<p>13/04/26 - (WK 1)</p> <p>Frayer Model Words</p> <p>Reaction</p>	<p>Homework</p> <p>SPARX Science</p>
<p>In LP4.5, I will know:</p> <p>What hydrocarbons are and how their structure and size affect their properties. How fractional distillation separates crude oil into useful fractions. How hydrocarbons burn completely or incompletely and how cracking forms alkenes.</p>	<p>20/04/26 - (WK 2)</p> <p>Frayer Model Words</p> <p>Properties</p>	<p>Homework</p> <p>SPARX Science</p>
<p>In LP4.6, I will know:</p> <p>How to review and recall key ideas from electrolysis, energy changes, rates and hydrocarbons. How to practise exam-style questions to improve accuracy and confidence. How to identify and correct misconceptions before assessment.</p> <p>Extended Task.</p>	<p>27/04/26 - (WK 1)</p> <p>Frayer Model Words</p> <p>Electrolysis</p>	<p>Homework</p> <p>SPARX Science</p>
<p>In LP4.7, I will know:</p> <p>How to consolidate understanding across all LP4 topics using retrieval practice. How to apply knowledge across different chemical ideas in combined questions. How to prepare effectively for the end-of-unit assessment.</p>	<p>04/05/26 - (WK 2)</p> <p>Frayer Model Words</p> <p>Retrieval</p>	<p>Homework</p> <p>SPARX Science</p>
<p>Resources to support learning: SPARX Science BBC Bitesize</p>		
<p>FFET Award Challenge for this Learning Programme: This task asks you to create a one-page poster linking real-life chemistry examples from LP4. Include one use of electrolysis, one everyday energy change, one factor that affects reaction rate, one reversible reaction with an explanation of equilibrium, and one use of hydrocarbons linked to fractional distillation. Each example should be brief, clear and show how the chemistry connects to real life.</p>		

PRT Task 1

PRT Task 2