

## Year 12 Chemistry T2

### Learning Programme 5

<p>The LORIC skill focus for his LP is: COMMUNICATION. The Moral Virtues focus for this LP are: COURAGE and HUMILITY.</p> <p>Courage - Acting with bravery and overcoming fears. Humility - Having a modest view of oneself.</p> <p><b>What will I be learning about in this Learning Programme?</b> The factors affecting the rate of reaction and how to deduce the rate of a reaction from the shape of a graph. How to apply Arrhenius' equation</p> <p><b>Where have I seen this learning before?</b> Earlier in Yr 12 you studied factors affecting the rate of reaction, techniques in measuring rates, calculation of K<sub>c</sub>, concentration and molar quantities.</p> <p><b>What could I use it for?</b> As a chemical engineer during industrial processes that require a balance between rate of product production and cost. Degree level study in a Chemistry field.</p>		<p><b>Literacy:</b></p> <ul style="list-style-type: none"> <li>Capital letters must be used at the start of sentences and for the first letter of proper nouns</li> <li>Full stops must be used at the end of a sentence</li> <li>Question marks must be used at the end of a question</li> <li>Apostrophes should only be used for possession or omission</li> <li>Days of the week and months must be spelled correctly</li> <li>Key words must be spelled correctly</li> </ul>	
<b>In LP5.1, I will know:</b>	<b>11/05/26 - (WK 1)</b>	<b>Key Vocabulary</b>	<b>Homework</b>
<p>how to explain and use the terms rate of reaction, order, overall order, rate constant, half-life, rate-determining step and deduce a rate equation from orders of the form rate = k[A]<sup>m</sup>[B]<sup>n</sup>, where m and n are 0, 1, or 2; how to deduce orders from experimental data and calculate the rate constant, k, and related quantities from a rate equation, including determination of units.</p>		Rate of reaction	Rate of reaction practice questions
<b>In LP5.2, I will know:</b>	<b>18/05/26 - (WK 2)</b>	<b>Key Vocabulary</b>	<b>Homework</b>
<p>how to deduce the order (0 or 1) with respect to a reactant from the shape of a graph and calculate reaction rates from the measurements of gradients; how to measure constant half-life, t<sub>1/2</sub>, from a concentration time graph and determine the rate constant, k, for a first order reaction from the constant half-life, t<sub>1/2</sub>, using the relationship: k = ln 2/t<sub>1/2</sub>.</p>		Rate Equation	PPQ on reaction rates
<b>LP5 RLW, I will:</b>	<b>01/06/26 - (WK 1)</b>		
review my learning, recalling and applying key knowledge, and focus on closing any gaps in my knowledge.			
<b>In LP5.3, I will know:</b>	<b>08/05/26 - (WK 2)</b>	<b>Key Vocabulary</b>	<b>Homework</b>
<p>how to explain the term rate of reaction and deduce the order of reaction for each reactant; how to use the rate equation to calculate the rate constant, k, and deduce the correct units.</p> <p>Extended Task.</p>		Rate constant	Practice questions on rates constants
<b>In LP5.4, I will know:</b>	<b>15/06/26 - (WK 1)</b>	<b>Key Vocabulary</b>	<b>Homework</b>
<p>how to deduce the order of a reaction with respect to each reactant based on a concentration-time graph.</p>		Order of Reaction	PPQ on the rate equation
<b>In LP5.5, I will know:</b>	<b>22/06/26 - (WK 2)</b>	<b>Key Vocabulary</b>	<b>Homework</b>
<p>how to calculate half-life, t<sub>1/2</sub>, for first order reactions; how to deduce the order of a reaction with respect to each reactant based on a rate-concentration graph.</p>		Half-life	Practice questions on half-life reactions
<b>In LP5.6, I will know:</b>	<b>29/06/26 - (WK 1)</b>	<b>Key Vocabulary</b>	<b>Homework</b>
<p>how to calculate the initial rate of reaction and t=0; how to predict possible steps in a reaction mechanism from the rate equation and the balanced equation for the overall reaction of a multi-step reaction.</p> <p>Extended Task.</p>		Initial Rate	Practice questions on initial reaction rates
<b>In LP5.7, I will know:</b>	<b>06/7/26 - (WK 2)</b>	<b>Key Vocabulary</b>	<b>Homework</b>
<p>how to calculate the initial rate of reaction and t=0; how to predict possible steps in a reaction mechanism from the rate equation and the balanced equation for the overall reaction of a multi-step reaction.</p>		Rate determining step	Practice questions on Rate determining step
<b>Resources to support learning:</b>			
Knowledge Organiser, Microsoft TEAMS, MaChem Guy YouTube videos. Knockhardy PPTs, Physics and Maths tutor.com, A level chemistry.co. uk			
<b>FFET Award Challenge for this Learning Programme:</b>			
Watch the Rough Science series and write a short review on what you have learnt about how chemistry can be used to solves problems in the real world.			

