

Year 13 Chemistry T2

Learning Programme 1

The LORIC skill focus for his LP is: LEADERSHIP The Moral Virtues focus for this LP are: COURAGE and HUMILITY. Courage - Acting with bravery and overcoming fears. Humility - Having a modest view of oneself. What will I be learning about in this Learning Programme? 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 Where have I seen this learning before? In Yr 12 you studied factors affecting the rate of reaction, techniques in measuring rates, calculation of K_c, concentration and molar quantities. What could I use it for? 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.		Literacy: - 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	
In LP1.1, I will know:	02/09/24 - (WK 1)	Key Vocabulary	Homework
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 $\text{rate} = k[A]^m[B]^n$, 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.		Rate of reaction	Rate of reaction practice questions
In LP1.2, I will know:	09/09/24 - (WK 2)	Key Vocabulary	Homework
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, $t_{1/2}$, from a concentration time graph and determine the rate constant, k, for a first order reaction from the constant half-life, $t_{1/2}$, using the relationship: $k = \ln 2/t_{1/2}$.		Order of reaction	PPQ on reaction rates
In LP1.3, I will know:	16/09/24 - (WK 1)	Key Vocabulary	Homework
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.		Rate constant	Practice questions on rates constants
Extended Task.			
In LP1.4, I will know:	23/09/24 - (WK 2)	Key Vocabulary	Homework
how to deduce the order of a reaction with respect to each reactant based on a concentration-time graph.		Concentration-time graph	PPQ on the rate equation
In LP1.5, I will know:	30/09/24 - (WK 1)	Key Vocabulary	Homework
how to calculate half life, $t_{1/2}$, for first order reactions; how to deduce the order of a reaction with respect to each reactant based on a rate-concentration graph.		Half life	Practice questions on half life reactions
In LP1.6, I will know:	07/10/24 - (WK 2)	Key Vocabulary	Homework
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.		Rate-Concentration graph	Practice questions on initial reaction rates
Extended Task.			
In LP1.7, I will know:	14/10/24 - (WK 1)	Key Vocabulary	Homework
how to describe the exponential relationship between the rate constant, k, and temperature, T, given by the Arrhenius equation, $k = Ae^{-E_a/RT}$; how to calculate quantities present at equilibrium.		Equilibrium	Practice questions on Arrhenius equation
Resources to support learning: Knowledge Organiser, Microsoft TEAMS, MaChem Guy YouTube videos. Knockhardy PPTs, Physics and Maths tutor.com, A level chemistry.co. uk			
FFET Award Challenge for this Learning Programme: 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.			

