West Kirby Grammar School

Curriculum Map – Year 13 – Chemistry (Teacher 1)

Topic name	Term	Skills developed	Link to subject Content	Prior learning	Next link in curriculum
Transition Metals	Autumn	• MS 4.1 and 4.2 Students understand and draw the shape of complex ions. • PS 3.1 and 3.2 Students determine the concentration of a solution of copper(II) ions by colorimetry. • AT d and k PS 1.2 Students could reduce vanadate(V) with zinc in acidic solution. AT b, d and k PS 4.1 • AT d and k PS 4.1 Students could investigate Mn2+ as the autocatalyst in the reaction between ethanedioic acid and acidified potassium manganate(VII).	• General properties of transition metals • Substitution reactions • Shapes of complex ions • Formation of coloured ions • Variable oxidation states • Catalysis	A Level 3.1.3 Bonding 3.1.2 Amount of Substance 3.1.7 Redox Reactions	• N/A
Reactions of Ions in Aqueous Solution	Autumn	• AT d and K PS 1.2 Students could carry out test-tube reactions of metal-aqua ions with NaOH, NH3 and Na2 CO3 Required Practical 11 Simple test tube reactions to Identify metal ions in aqueous solution	• Aqua Ions • Hydrolysis with sodium hydroxide • Hydrolysis with ammonia • Amphoteric Nature	GCSE 4.8 Chemical Analysis A Level 3.2.5 Transition Metals	• N/A
Thermodynamics	Autumn	• AT a, b and k PS 3.2 Students find ΔS for vaporization of water using a kettle. MS 2.2, 2.3 and 2.4 Students rearrange the equation ΔG = ΔH – TΔS to find unknown values. MS 3.3 Students determine ΔS and ΔH from a graph of ΔG versus T.	• 1. Born–Haber cycles • 2. Gibbs free-energy change, ΔG, and entropy change, ΔS	A Level • 3.1.4 Energetics	• N/A

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Rate Equations	Spring	• MS 0.0 and 2.4 Students use given rate data and deduce a rate equation, then use some of the data to calculate the rate constant including units. • AT a, b, k and l PS 2.4 and 3.1 Students could determine the order of reaction for a reactant in the iodine clock reaction. MS 3.1 Students MS 3.3, 3.4 and 3.5	• Rate equations • Determination of rate equation Required Practical 7 Measuring the rate of reaction by initial rate method and Continuous monitoring	GCSE 4.6 Rate of Reaction A Level • 3.3.5 Kinetics	• N/A
Equilibrium Constant Kp for Homogeneous Systems	Spring	• MS 1.1 MS 2.2 and 2.3 Students calculate the partial pressures of reactants and products at equilibrium. Students calculate the value of an equilibrium constant K p	• Equilibrium Constant K_p	GCSE 4.6 Equilibria A Level • 3.3.6 Equilibrium Constant K_c	• N/A
Electrode Potentials	Spring	• AT j and k PS 1.1 Students make simple cells and use them to measure unknown electrode potentials. AT a, b, j and k PS 2.1 and 2.4 Students carry out an experiment to investigate the effect of changing conditions, such as concentration or temperature, in a voltaic cell such as Zn|Zn2+||Cu2+|Cu AT j and k PS 2.2 Required Practical 8 Measuring the EMF of an electrochemical cell	• Electrode potentials and cells • Commercial applications of electrochemical cells	GCSE 4.4 Electrolysis A Level • 3.3.7 Redox Reactions	• N/A