Yr12 Chemistry – Unit 3.1

MAGHULL HIGH SCHOOL – CURRICULUM MAP

	Sequence			
TOPIC (S) **CHEMICAL EQUILIBRIA, LE CHATELIER'S PRINCIPLE AND KC**	1. Chemical equilibria and Le Chatelier's principal 2. Equilibrium constant (K_c) for homogenous systems			
Knowledge & Skills development	• Know many chemical reactions are reversible. • Know in a reversible reaction at equilibrium: forward and reverse reactions proceed at equal rates, the concentrations of reactants and products remain constant. • Know Le Chatelier's principle can be used to predict the effects of changes in temperature, pressure and concentration on the position of equilibrium in homogeneous reactions. • Know a catalyst does not affect the position of equilibrium. • Use Le Chatelier's principle to predict qualitatively the effect of changes in temperature, pressure and concentration on the position of equilibrium • Explain why, for a reversible reaction used in an industrial process, a compromise temperature and pressure may be used. • Carry out test-tube equilibrium shifts to show the effect of concentration and temperature (eg Cu(H2O)62+ with concentrated HCl). • Know the equilibrium constant Kc is deduced from the equation for a reversible reaction. • Know the concentration, in mol dm–3, of a species X involved in the expression for Kc is represented by [X] • Know the value of the equilibrium constant is not affected either by changes in concentration or addition of a catalyst. • Construct an expression for Kc for a homogeneous system in equilibrium		• Calculate a value for Kc from the equilibrium concentrations for a homogeneous system at constant temperature • Perform calculations involving Kc • Predict the qualitative effects of changes of temperature on the value of Kc • Estimate the effect of changing experimental parameters on a measurable value eg how the value of Kc would change with temperature, given different specified conditions. • Report calculations to an appropriate number of significant figures, given raw data quoted to varying numbers of significant figures. • Understand that calculated results can only be reported to the limits of the least accurate measurement. • Calculate the concentration of a reagent at equilibrium. • Calculate the value of an equilibrium constant Kc • Determine the equilibrium constant, Kc, for the reaction of ethanol with ethanoic acid in the presence of a strong acid catalyst to ethyl ethanoate.	
Assessment / Feedback Opportunities	Exam questions – teacher assessed	Exam questions – self assessed	Extended writing task – teacher assessed	Topic assessment
Cultural Capital	• Trip to Banner chemicals manufacturing plant			

SMSC / Promoting British Values **(Democracy, Liberty, Rule of Law, Tolerance & Respect)**	• Need for compromise in manufacture of chemical products on economy and environment
Reading opportunities	• Recommended Read: https://sciencenotes.org/today-in-science-history-october-8-henry-louis-le-chatelier/
Key Vocabulary	Reversible reaction, equilibrium, Kc, Le Chatelier, homogenous, Independent Variable, Dependent Variable, Control Variables, Method, Conclusion, Precaution, Evaluation, Reliable, Precision, Valid, Anomaly, Describe, Explain, Compare, Analyse, Calculate, Suggest, Absolute, Uncertainty, Error
Digital Literacy	Research and referencing MSOffice35 apps including SharePoint
Cross-Curricular Links	Numeracy/Maths – averages (means), reading scales, graph plotting, lines of best fit, using and rearranging equations, using scientific calculators
Careers	Chemical safety engineer, hazardous materials manager, botanist/agriculture