



MAGHULL HIGH SCHOOL – CURRICULUM MAP

Unit: Energetics	1. Enthalpy Change 2. Calorimetry	3. Applications of Hess' Law 4. Bond enthalpies	
LESSONS			
Knowledge & Skills Development	<ul style="list-style-type: none"> Know reactions can be endothermic or exothermic. Know enthalpy change (ΔH) is the heat energy change measured under conditions of constant pressure. Know standard enthalpy changes refer to standard conditions ie 100 kPa and a stated temperature (eg $\Delta H_{298\theta}$). Define standard enthalpy of combustion ($\Delta_c H^\theta$) Define standard enthalpy of formation ($\Delta_f H^\theta$). Know the heat change, q, in a reaction is given by the equation $q = mc\Delta T$ where m is the mass of the substance that has a temperature change ΔT and a specific heat capacity c. Use this equation to calculate the molar enthalpy change for a reaction Use this equation in related calculations. Understand that the correct units need to be used in $q = mc\Delta T$ Report calculations to an appropriate number of significant figures, given raw data quoted to varying numbers of significant figures. 	<ul style="list-style-type: none"> Understand that calculated results can only be reported to the limits of the least accurate measurement Required practical 2 Measurement of an enthalpy change. Find ΔH for a reaction by calorimetry. Examples of reactions could include: dissolution of potassium chloride, dissolution of sodium carbonate, neutralising NaOH with HCl, displacement reaction between $\text{CuSO}_4 + \text{Zn}$, combustion of alcohols. Use Hess's law to perform calculations, including calculation of enthalpy changes for reactions from enthalpies of combustion or from enthalpies of formation. Define the term mean bond enthalpy Understand that bond enthalpies are mean values across a range of compounds containing that bond. Use mean bond enthalpies to calculate an approximate value of ΔH for reactions in the gaseous phase Explain why values from mean bond enthalpy calculations differ from those determined using Hess's law. 	
Assessment / Feedback Opportunities	Formative Assessment Teacher questioning Quizzes Exam style questions	Summative assessment End of topic assessment Exam questions in future end of topic assessments to assess recall	
Key Vocabulary	Enthalpy, Exothermic, Endothermic, Calorimetry, Hess's Law, Independent Variable, Dependent Variable, Control Variables, Method, Conclusion, Precaution, Evaluation, Reliable, Precision, Valid, Anomaly, Describe, Explain, Compare, Analyse, Calculate, Suggest, Absolute, Uncertainty, Error		

Literacy/Reading Opportunities	Subject specific vocabulary introduced before reading of related texts Word etymology from Latin and Greek roots Reading of simple and complex sentences, paragraphs, articles Scientific writing including structuring methods, comparisons and evaluations
Cross Curricular Themes	Numeracy/Maths – averages (means), reading scales, graph plotting, lines of best fit, using and rearranging equations, using scientific calculators, significant figures
Personal Development (Including British Values, RSE, Citizenship)	None
Career Opportunities	Regulatory Affairs, Quality Assurance, Environmental Protection, Public Health, Chemical Health and Safety