YEAR 12 CHEMISTRY

MAGHULL HIGH SCHOOL – CURRICULUM MAP

Unit: **Alcohols** **LESSONS**	1. Alcohol production	2. Oxidation of alcohols	3. Elimination
Knowledge & Skills Development	• Know alcohols are produced industrially by hydration of alkenes in the presence of an acid catalyst. • Know ethanol is produced industrially by fermentation of glucose and the conditions for this process. • Know ethanol produced industrially by fermentation is separated by fractional distillation and can then be used as a biofuel. • Explain the meaning of the term biofuel • Justify the conditions used in the production of ethanol by fermentation of glucose • Write equations to support the statement that ethanol produced by fermentation is a carbon-neutral fuel and give reasons why this statement is not valid • Outline the mechanism for the formation of an alcohol by the reaction of an alkene with steam in the presence of an acid catalyst • Discuss the environmental (including ethical) issues linked to decision making about biofuel use. • Produce ethanol by fermentation, followed by purification by fractional distillation. • Know alcohols are classified as primary, secondary and tertiary. • Know primary alcohols can be oxidised to aldehydes which can be further oxidised to carboxylic acids. • Know secondary alcohols can be oxidised to ketones.	• Know tertiary alcohols are not easily oxidised. • Know acidified potassium dichromate(VI) is a suitable oxidising agent. • Write equations for these oxidation reactions (equations showing [O] as oxidant are acceptable) • Explain how the method used to oxidise a primary alcohol determines whether an aldehyde or carboxylic acid is obtained • Use chemical tests to distinguish between aldehydes and ketones including Fehling's solution and Tollens' reagent. • Carry out the preparation of an aldehyde by the oxidation of a primary alcohol. • Carry out the preparation of a carboxylic acid by the oxidation of a primary alcohol. • Know alkenes can be formed from alcohols by acid-catalysed elimination reactions. • Know alkenes produced by this method can be used to produce addition polymers without using monomers derived from crude oil. • Outline the mechanism for the elimination of water from alcohols. • Carry out the preparation of cyclohexene from cyclohexanol, including purification using a separating funnel and by distillation. • **Required practical 5** Distillation of a product from a reaction.
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	Alkene, catalyst, fermentation, biofuels, fractional distillation, purification, oxidation, oxidising agent, acid catalysed elimination, 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	Perfume/ fragrance manufacturer, brewmaster, food scientist,