Meden School Curriculum Planning							
Subject	Chemistry	**Year Group**	13	**Sequence No.**		**Topic**	3.3.11 Amines 3.3.12 Polymers

Retrieval	Core Knowledge	Student Thinking
What do teachers need to **retrieve** from students before they start teaching **new content**?	What **specific ambitious knowledge** do teachers need to teach students in this sequence of learning?	What real life examples can be applied to this sequence of learning to **development of our students thinking, encouraging them to see the inequalities around them** and 'do something about them!'
A Level Bonding, polar bonds and electronegative elements. A Level 3.3.1-3.3.2 Sections on nomenclature and isomers A level 3.3.3.1 Halogenoalkanes reactions A level 3.3.3.1 Nucleophiles and	**3.3.11.1 Preparation of Amines** Primary aliphatic amines can be prepared by the reaction of ammonia with halogenoalkanes and by the reduction of nitriles. Aromatic amines, prepared by the reduction of nitro compounds, are used in the manufacture of dyes. **3.3.11.2 Base Properties** Amines are weak bases. The difference in base strength between ammonia, primary aliphatic and primary aromatic amines. Students should be able to explain the difference in base strength in terms of the availability of the lone pair of electrons on the N atom. To include the inductive effect of alkyl groups and the withdrawal of electrons due to delocalization effect of benzene rings. **3.3.11.3 Nucleophilic Properties** Amines are nucleophiles. The nucleophilic substitution reactions of ammonia and amines with halogenoalkanes to form primary, secondary, tertiary amines and quaternary ammonium salts.	

Nucleophilic Substitution reactions A level 3.3.4.3 Addition Polymers	The use of quaternary ammonium salts as cationic surfactants. The nucleophilic addition–elimination reactions of ammonia and primary amines with acyl chlorides and acid anhydrides. Students should be able to outline the mechanisms of: • these nucleophilic substitution reactions • the nucleophilic addition–elimination reactions of ammonia and primary amines with acyl chlorides. **3.3.12.1 Condensation Polymers** Condensation polymers are formed by reactions between: • dicarboxylic acids and diols • dicarboxylic acids and diamines • amino acids. The repeating units in polyesters (eg Terylene) and polyamides (eg nylon 6,6 and Kevlar) and the linkages between these repeating units. Typical uses of these polymers. Students should be able to: • draw the repeating unit from monomer structure(s) • draw the repeating unit from a section of the polymer chain • draw the structure(s) of the monomer(s) from a section of the polymer • explain the nature of the intermolecular forces between molecules of condensation polymers. Students could make nylon **3.3.12.2 Biodegradability and Disposal of Polymers** Polyalkenes are chemically inert and non-biodegradable. Polyesters and polyamides can be broken down by hydrolysis and are biodegradable. The advantages and disadvantages of different methods of disposal of polymers, including recycling. Students should be able to explain why polyesters and polyamides can be hydrolysed but polyalkenes cannot.	As a global citizen, there is a need to use plastics responsibily and to limit their impact on the environment A Guide to Plastic in the Ocean (noaa.gov) Investigate the need to replace crude oil polymers with biodegradable, plant based polymers. Everything you need to know about plant-based plastics | National Geographic