

Subject	Year	Term
Chemistry	13	1
Topic		
6.1.3 Carboxylic acids and esters		
Content (Intent)		
<p>Prior Learning (Topic) 1. Practical skills, 2.1, Atoms and reactions, 2.2.2 Bonding and structure (hydrogen bonding), 4.1.1 Basic concepts, 4.2.1 Alcohols, 4.2.3 Practical skills and synthesis, 6.1.1 Aromatics, 6.1.2 Carbonyls, 6.2.5 Organic synthesis</p>		
<p>Properties of carboxylic acids</p> <p>(a) explanation of the water solubility of carboxylic acids in terms of hydrogen bonding</p> <p>(b) reactions in aqueous conditions of carboxylic acids with metals and bases (including carbonates, metal oxides and alkalis)</p> <p>Esters</p> <p>(c) esterification of:</p> <p>(i) carboxylic acids with alcohols in the presence of an acid catalyst (e.g. concentrated H₂SO₄)</p> <p>(ii) acid anhydrides with alcohols</p> <p>(d) hydrolysis of esters:</p> <p>(i) in hot aqueous acid to form carboxylic acids and alcohols</p> <p>(ii) in hot aqueous alkali to form carboxylate salts and alcohols</p> <p>Acyl chlorides</p> <p>(e) the formation of acyl chlorides from carboxylic acids using SOCl₂</p> <p>(f) use of acyl chlorides in synthesis in formation of esters, carboxylic acids and primary and secondary amides.</p>		
<p>Future Learning (Topic) 6.2.1 amines, 6.2.2 Amino acids, amides and chirality, 6.2.3 Polyesters and polyamides, 6.2.4 Carbon-carbon bond formation, 6.3.2 Spectroscopy</p>		
How will knowledge and skills be taught? (Implementation)	How will your understanding be assessed & recorded (Impact)	
<p>Demos</p> <p>Reactions of acyl chlorides</p> <p>Practical work</p> <p>Reactions of carboxylic acids</p> <p>Hydrolysis of an ester</p> <p>Making an ester</p> <p>Written</p> <p>Presentations</p> <p>Past paper question examples and answers</p> <p>Modelled answers with key points/terms</p> <p>Explanation of the water solubility of carboxylic acids</p>	<p>- 1 x standard homework (Grade given. Written feedback. Response expected.)</p> <p>-1 x end of topic test (Grade given. Verbal feedback to class and individuals.)</p> <p>- 1 x paper 2</p>	

How to identify a primary and secondary amide	
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How can parents help at home?

Look at the topic specific resources on the VLE
Use appropriate websites: MachemGuy, Allery Chemistry, Chemistry World – by Royal Society of Chemistry, ChemGuide.
Take an interest! Ask your children what they have learnt and be curious about their learning.

Helpful further reading/discussion

Reading	Vocabulary Lists	Careers Links
Text book: A level chemistry for OCR by Rob Ritchie and Dave Gent. Chapter 26 p.466-473 The Science of Everyday Life by Marty Jopson Why Chemical Reactions Happen by Keeler and Wothers	hydrogen bonding esterification acid hydrolysis base hydrolysis carboxylate salt acyl chloride primary amide secondary amide	Medicine Veterinary science Material science Biomedical sciences Environmental science Toxicologist Pharmacist Dentist Patent law Forensic science