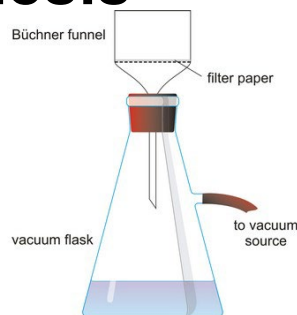


Organic Synthesis

The key areas of study in this topic are:

- Extending the carbon chain length
- Practical skills
- Synthetic routes



By the end of this topic I should be able to:

	Start	End
Describe the use of C–C bond formation in synthesis to increase the length of a carbon chain		
Describe the formation of C–C≡N by the reaction of: <ul style="list-style-type: none"> • haloalkanes with CN[–] and ethanol (nucleophilic substitution mechanism) • carbonyl compounds with HCN (nucleophilic addition mechanism) 		
Describe the reaction of nitriles: <ul style="list-style-type: none"> • by reduction (e.g. with H₂/Ni) to form amines • by acid hydrolysis to form carboxylic acids 		
Describe the formation of a substituted aromatic C–C by alkylation (using a haloalkane) and acylation (using an acyl chloride) in the presence of a halogen carrier (Friedel–Crafts reaction)		
Understand the techniques and procedures used for the preparation and purification of organic solids involving use of a range of techniques including: <ul style="list-style-type: none"> • organic preparation <ul style="list-style-type: none"> ○ use of Quickfit apparatus ○ distillation and heating under reflux • purification of an organic solid <ul style="list-style-type: none"> ○ filtration under reduced pressure ○ recrystallization ○ measurement of melting points 		
For an organic molecule containing several functional groups: <ul style="list-style-type: none"> • identify the individual functional groups present • predict properties and reactions 		
Suggest multi-stage synthetic routes for preparing organic compounds.		

In all topic areas you should be able to demonstrate and apply your knowledge and understanding.

