IUPAC Nomenclature of Alcohols, Aldehydes, Ketones, and Carboxylic Acids

Note: Only straight-chain oxygen-containing compounds are covered in CHEM 1020.

Each of these families of compounds are named using the following convention:

1. Count the number of carbon atoms in the molecule and write the name of the alkane that has the same number of carbon atoms.
2. Drop –e from the alkane name.
3. If the compound is a(n):
   - alcohol, replace with the suffix –ol.
     - The position of the hydroxyl group is numbered if there are three or more carbons.
   - aldehyde, replace with the suffix –al.
   - ketone, replace with one.
     - The position of the carbonyl group is numbered.
   - carboxylic acid, replace with a suffix of –oic acid.

Nomenclature of Ethers

Name each alkyl group attached to the oxygen in alphabetical order, followed by the word ether (Example: butyl ethyl ether). If the two attached alkyl groups are identical, use the prefix di- for the alkyl group (Example: dimethyl ether).

IUPAC Nomenclature of Esters

1. The portion of the ester derived from the alcohol is named as an alkyl group.
2. The portion derived from the carboxylic acid named by
   - Dropping –ic acid from the acid name.
   - Replacing with a suffix of –ate.
   - Example: propyl butanoate (derived from 1-propanol and butanoic acid)