Competencies for CHEM 1020 (Introduction to Chemistry II)

Item number	Description	presentation methods	evaluation methods
	IUPAC naming of organic compounds		
1	Be able to name the alkames through the 10 carbon chain length (see list below)		
2	Be able to name the alkenes and alkynes through to a 10 carbon chain		
3	Be able to name the alkyl groups through 5 carbons (see list below)		
4	Be able to recognize and describe structural isomers		
5	Be able to recognize and describe geometrical isomers caused by hindered rotation or by cycloalkane rings (includeing cis- & trans-)		
6	Be able to name the functional groups (see list below)		
7	Be able to name compounds with functional groups		
8	Be able to name simple ring compounds (see list below)		
9	Be able to recognize and describe aromatic compounds		
	Be able to name some of the aromatic compounds and derivatives (see list below)		
	Common names		
10	Be able to name some simple compounds by their common names (see list below)		
	Reactions (Be able to complete the following type of reactions)		
	Bea able to complete the halogenations substitution reactions for alkanes		
11	Be able to complete the halogenation reaction		
12	Be able to complete the hydrogenation reaction		
13	Be able to complete the mild oxidatin reaction of alkenes and alkynes		
14	Be able to complete the esterification reaction		
15	Be able to complete the peptide reaction		
16	Be able to complete the substitution reactionas for aromatics		
17	Know the function of Lewis acids in the substitution reaction		

Functional Groups

Name	symbollic representation
alcohol	R-OH
Carboxylic acid	R-COOH
Primary amine	R-NH_2
Secondary amine	R_2NH
tertiary amine	R_3N
quatinary ion	R_4N^+
aldehyde	R-CHO
ketone	ROR
ether	RCOOR
amide	RCONHR $RCONR_2$
thiol	RSH

Some Common Names for Compounds

Common Name	IUPAC Name	Formula
acetylene	ethyne	HCCH
ethylene	ethene	$H_2C{=}CH_2$

Alkanes and alkyl gromp names

Name	Formula
methane	CH_4
ethane	CH_3CH_3
propane	$CH_3CH_2CH_3$
butane	$CH_3CH_2CH_2CH_3$
pentane	$CH_3CH_2CH_2CH_2CH_3$
hexane	$CH_3(CH_2)_4CH_3$
heptance	$CH_3(CH_2)_5CH_3$
octane	$CH_3(CH_2)_6CH_3$
nonane	$CH_3(CH_2)_7CH_3$
decane	$CH_3(CH_2)_8CH_3$

Names of alkyl groups

Name	Formula
methyl	$-CH_3$
ethyl	$-CH_2CH_3$
propyl	$-CH_2CH_2CH_3$
butyl (n-butyl)	$-CH_2CH_2CH_2CH_3$
pentyl (n-pentyl)	$-CH_2CH_2CH_2CH_2CH_3$

Some simple ring compounds

Names of some aromatic compounds