

Faculty of Applied Sciences



MAPR1230 Complements of organic chemistry

[15h+15h exercises] 2 credits

This course is taught in the 1st semester

Teacher(s): Sophie Demoustier, Pierre Godard (coord.)
Language: French
Level: First cycle

Aims

to give the theoretical bases of organic chemistry in view to be able of approaching more specialized fields.
 to initiate the students to a logical thinking based on some experimental observations and susceptible of generalization.
 At the end of the module, the students would be able
 to emphasize the relationships between molecular and spatial structures and some properties, more particularly their behaviour as organic reactant.
 to understand, on the base of the electron displacements inside molecules, the mechanisms of the different steps intervening in the main organic reactions.

Main themes

The course is divided into 3 parts.
 The first part (0.2 ECTS) deals with the structures and bonds in organic molecules
 The second part (0.5 ECTS) is devoted to the study of the influence of the electronic structure of organic molecules on some physical properties.
 The third part (1.8 ECTS) develops the main reactions in organic chemistry.

Content and teaching methods

Content :

Part 1 :

Covalent bonds, concept of hybridisation and geometry

Functions and functional groups, functionality

Concept of isomerism including stereo isomerism

Part 2 : Electron displacements inside molecules

Inductive effects (permanent polarization) and polarizability (induced polarization)

Mesomer effect

Relations with some properties (boiling temperature, acid-base character, acid and base strength)

Part 3 : Reactivity from some examples choosen between following reactions:

Nucleophilic substitution reactions on aliphatic carbon

Electrophilic and radical addition reactions on alkenes

Elimination reactions of alkyl halides and alcohols

Addition and substitution reactions on carbonyl compounds

Substitution on aromatic compounds

Oxidation and reduction reactions

Methods :

Ex-cathedra courses and exercises, eventually study developed from problems.

Some laboratories would be indicated but are not organized at the present time.

Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

FSAB1301 or an equivalent course

Other credits in programs

FSA13BA	Troisième année de bachelier en sciences de l'ingénieur, orientation ingénieur civil	(2 credits)
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