



CHM1111 General chemistry 1

[60h+60h exercises] 10 credits

This course is taught in the 1st semester

Teacher(s): Michel Devillers, Bernard Tinant
Language: French
Level: First cycle

Aims

To give the bases of scientific reasoning, first qualitative, then quantitative, allowing to understand, analyse and forecast simple chemical phenomena. To give a global view of general chemistry from the point of view of matter constitution (atomic theory and chemical bonding), the main classes of reactions and chemical equilibrium. To illustrate the fundamental concepts by referring to examples of mineral chemistry linked to daily life and to the present challenges in science and technology.

Main themes

The course will familiarize with scientific reasoning, the chemical and physico-chemical phenomena and the rules that they depend on. It will deal with (1) the classical atomic theory, leading to understanding the constitution, organisation and properties of atoms (2) mass relationship in chemical reactions and the concept of limiting reagents (3) the description of chemical bonding and the geometry of molecules, (4) the study of the main classes of chemical reactions, (5) an introduction to physical chemistry and its thermodynamic and kinetic aspects, with particular emphasis on chemical equilibrium. The course will cover in detail the acid-base reactions (including pH calculations, acid base titrations and buffer solutions), the reactions of precipitation and complexation, as well as oxido-reduction reactions (including the applications in batteries and electrolysis). Selected illustrations of these concepts will also provide a general overview of mineral chemistry in relation with its main industrial uses and daily life.

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

Prerequisites: secondary school level.

Evaluation: Written and oral examination at the end of the year. Continuous evaluation (preparations and reports of laboratory work).

Support: book of P. Atkins and L. Jones "Chimie: molécules, matière, métamorphoses", French traduction from A. Pousse (De Boeck), or original english version. Lecture notes. Manual for laboratory work.

Other credits in programs

BIOL11BA	Première année de bachelier en sciences biologiques	(10 credits)	Mandatory
BIR11BA	Première année de bachelier en sciences de l'ingénieur, orientation bioingénieur	(10 credits)	Mandatory
CHIM11BA	Première année de bachelier en sciences chimiques	(10 credits)	Mandatory
GEOG11BA	Première année de bachelier en sciences géographiques	(10 credits)	Mandatory
SINF12BA	Deuxième année d'études de bachelier en sciences informatiques	(10 credits)	