



3 credits

22.5 h + 22.5 h

Q1

Teacher(s)	Filinchuk Yaroslav ;
Language :	French
Place of the course	Louvain-la-Neuve
Main themes	<ul style="list-style-type: none"> - Structure of matter - Structure of atoms - The periodic table - Chemical equations, reaction stoichiometry - Important reactions in inorganic chemistry - Chemical bonds - Lewis structures, resonance, hybridization and molecular geometry. - Thermochemistry - Essentials of organic chemistry
Aims	<p>1 Understanding the basics of general chemistry, structure and properties of matter, chemical reactions and importance of chemistry in many areas.</p> <p>-----</p> <p><i>The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".</i></p>
Evaluation methods	<ul style="list-style-type: none"> - The lab works give you a total of 4 points. These are made by half of the questions at the beginning of the laboratory works and by another half by laboratory reports. - There is a written exam counting for 16 points. These are basically the exercises applied to the theoretical course. These exercises are of the same style as those made in exercise sessions during the year. - The mid-term examination allows you to get an additional (bonus) point to the final exam.
Teaching methods	The course is taught with the use of PowerPoint slides, available at iCampus. Exercises are provided to facilitate the understanding. The course will be illustrated with examples taken from everyday life in the living world and in industry.
Content	Fundamental concepts of chemistry. Introduction to the periodic table. Stoichiometry, concentration. The gas laws. Energy, heat, thermochemistry; the first law of thermodynamics, enthalpy. Quantum numbers, orbitals. Chemical bonds: ionic, covalent, intermolecular. Molecular geometry, hybridization of orbitals. The rate and the mechanism of reactions, influence of catalysts. Chemical equilibrium, predicting the direction of a reaction; equilibrium constant. Chemical reactions in solution, strong and weak electrolytes. Acid-base reactions, pH and concentration of hydronium ions; titration. Solubility and precipitation, the solubility product, the common-ion effect. Oxidation and reduction, redox equations. Introduction to electrochemistry, electrochemical cells and electrolysis.
Bibliography	<ol style="list-style-type: none"> 1. Maxi fiches de Chimie générale, 2e édition, 83 fiches, de Yann Verchier, Anne-Laure Valette Delahaye et Frédérique Lemaître, 2011. 2. Chimie (+ un livre des exercices et problèmes), 1re année MPSI - PTSI, de André Durupthy, Jacques Estienne, Magali Giacino, Alain Jaubert etc, 2003. 3. Principes de chimie, de William Atkins et Loretta Jones, De Boeck, 2e édition, 2011.
Faculty or entity in charge	SC

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Aims
Bachelor in Physics	PHYS1BA	3		
Bachelor in Mathematics	MATH1BA	3		
Minor in Scientific Culture	LCUSC100I	3		