UCLouvain

binge1140

2023

Sciences and technologies I

5.00 credits	45.0 h + 22.5 h	Q1

Teacher(s)	Gathy Thomas ;
Language :	French
Place of the course	Bruxelles Saint-Louis
Learning outcomes	**At the end of this learning unit, the student is able to :** By the end of the course, the students should be able to explain, using the appropriate chemistry terms and understanding the concepts that they cover, the nature and transformations of the most commonly used compounds in the chemical industry. They should be able to put into equation and solve simple problems that implement classical parameters of chemical transformations (masses, concentrations, behaviour of ideal gas, enthalpies, speed constants and equilibrium constants of chemical reactions, pH and redox potential). This course does not aim to provide the student with an immediate profitable professional competence, but to initiate them to a modern molecular analysis of nature and its transformations. At Saint-Louis University, chemistry education in the first year of bachelor degree is a kind of test activity as the students may decide at the end of the first term if they continue their training as management engineer or if they abandon this course direction in favour of economic and management sciences. Therefore, this course helps students to quickly self-assess their own abilities in science and if necessary, adjust their course orientation.
Evaluation methods	Formative assessment is carried out during the correction of exercises in seminars and/or courses. The final assessment of all learning outcomes consists of a written examination which may include theory or reflection questions and exercises.
Teaching methods	- Lecture : The lecture is given in front of an audience. Examples are solved on the blackboard. Course notes to support the presentation, copies of overheads, articles for further reading (in various languages) and book references are made available (Reprography and/or Moodle). - Seminars : The assistant in charge of seminars guides students through the exercises.
Content	a) Lecture : - Atomistic: constitution of atoms; electron shells; electronic configuration; Lewis symbols; periodic properties of the elements; electronegativity of elements. - Chemical bonding: covalent bond; ionic bond; molecular geometries. - Ideal gas law: elements of kinetic theory of gases. - Chemical equilibriums: Le Chatelier's principle: effect of concentrations, temperature and pressure on chemical equilibriums. - Heterogeneous solid-liquid equilibrium: solubility and solubility product. - Acid-base equilibrium: calculation of pH. - Redox equilibrium: oxidation states; redox couples; standard reduction potential; Nernst equation; electrolytic batteries and cells. These concepts are illustrated with examples. b) Seminars To assimilate the theory, students have to put into equation and solve chemistry problems by themselves. Therefore seminars are held in small groups in order to allow interactive teaching.
Inline resources	The online materials are : Notes de cours Powerpoint Data tables Syllabus exercises video websites
Bibliography	Principe de chimie ; P.W. Atkins, L. Jones, L. Laverman ; De Boeck Supérieur

Faculty or entity in charge	ESPB

Programmes containing this learning unit (UE)

Program title	Acronym	Credits	Prerequisite	Learning outcomes
Bachelor : Business Engineering	INGB1BA	5		🔍
Bachelor : Business Engineering (French-English)	INAB1BA	5		🔍
Bachelor : Business Engineering (French-Dutch-English)	INTB1BA	5		🔍