UCLouvain

binge1140

2024

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 :** • explain, in appropriate chemical terms and understanding the concepts they cover, the nature and transformation of the most common compounds used in the chemical industry. • equate and solve simple problems involving the classic parameters of chemical transformations (masses, concentrations, behavior of perfect gases, enthalpies, rate constants and equilibrium constants of chemical reactions, pH and redox potentials).
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		🔍