Content

Course Code	Course Name	Semester	Theory	Practice	Lab	Credit	ECTS
ING127	Chemistry	1	2	0	2	3	4

Prerequisites	
Admission Requirements	
Language of Instruction	French
Course Type	Compulsory
Course Level	Bachelor Degree
Objective	This course aims to provide students with the fundamental knowledge (aqueous solutions, chemical thermodynamics) necessary to understand the operation of industrial chemical reactors used to manufacture basic products in various industrial sectors. In this context, the objectives of this course are as follows: - To provide students with basic knowledge of aqueous solutions (pH, redox reactions, complexation, and precipitation) - To use the fundamental principles of chemical thermodynamics to understand, both qualitatively and quantitatively, the study of chemical reactions and the concept of chemical equilibrium - To establish a link with the physical thermodynamics course
Content	1. Review of aqueous solutions (solvent-solute) 2. Concepts of acids/bases (according to Brønsted) - Acid-base pairs 3. Reactions between acids and bases - pH calculation 4. Complexation reactions: precipitation 5. Redox reactions: definitions 6. Redox reactions 7. Application to the operation of electrochemical cells 8. Midterm exam week 9. Introduction to chemical thermodynamics 10. First Law of Thermodynamics 11. Second Law and evolution of a chemical system 12. Chemical equilibrium: theoretical approach 13. Chemical equilibrium: applications 14. Laws of chemical equilibrium shifts (Lavoisier)
References	1. Atkins, P.W., “Chimie Physique – Vuibert”, 2 vol., 1274 p. U- 2. Atkins P.W., “Éléments de chimie physique”, De Boeck, 1998. 3. Course Notes

Theory Topics

Week	Weekly Contents
1	A reminder about aqueous solutions
2	Acids and Bases: Definitions
3	Reactions between acids and bases - pH calculation
4	Complexation reactions: precipitation
5	Redox reactions: definitions
6	Redox reactions
7	Application to the operation of electrochemical cells
8	Midterm
9	Introduction to Chemical Thermodynamics
10	First Law of Chemical Thermodynamics
11	Second Law and evolution of a chemical system
12	Chemical equilibrium: a theoretical approach
13	Chemical equilibrium: applications
14	Laws of chemical equilibrium shifts (Lavoisier)