

# Thermodynamique chimique

## Lecturers

Geneviève DUPONT (Coordinator) and Yannick DE DECKER

## Course mnemonic

CHIM-F205

## ECTS credits

5 credits

## Language(s) of instruction

French

## Course period

Second term

## Course content

I. CHEMICAL THERMODYNAMICS : introduction, first principle, second principle, Nernst-Planck theorem, thermodynamics of perfect and real gases, chemical equilibrium, heterogeneous equilibria, thermodynamics of interfaces II. INTRODUCTION TO STATISTICAL MECHANICS : Boltzmann distribution and molecular partition function, canonical partition function, statistical expressions for U, S, F, p, H and G, derivation of the perfect gas equation and the Van der Waals equation, relationship between the equilibrium constant and the partition functions

## Objectives (and/or specific learning outcomes)

The aim of the course is to provide a rigorous description of the basic principles of chemical thermodynamics and their statistical foundation. These principles are illustrated with typical chemical reactions and phase transition phenomena.

## Pre-requisites and co-requisites

### Pre-requisites courses

CHIM-F101 | Chimie générale | 10 crédits, CHIM-F101 | Chimie générale | 15 crédits, CHIM-F101 | Chimie générale | 20 crédits and CHIM-F101 | Chimie générale | 5 crédits

### Course having this one as co-requisite

CHIM-F321 | Thermodynamique statistique | 5 crédits

## Teaching method and learning activities

Ex-cathedra teaching. Supervised seminars for the resolution of problems.

## Other information

### Contact(s)

gdupont@ulb.ac.be

## Evaluation method(s)

Other

### Evaluation method(s) (additional information)

One written examination about problems, and one oral examination.

## Programmes

Programmes proposing this course at the faculty of Sciences

BA-CHIM | Bachelor in Chemistry | unit 2