Course: Physical Chemistry 2 — credits: 5

Course code	CHVH24FYSCHEMIE2
Name	Physical Chemistry 2
Study year	2026-2027
ECTS credits	5
Language	Dutch, with parts in English
Coordinator	I. Yacheur
Modes of delivery	Lecture Practical / Training Tutorial
Assessments	Reactiekinetiek - Computer, organised by STAD examinations Thermodynamica - Written, organised by STAD examinations

Learning outcomes

You set up rate equations and use them to determine order and rate constant from experimental data.

You use various theoretical models to predict reaction rates, and calculate the effect of temperature and a catalyst on reaction rates.

You apply the theoretical knowledge gained about reaction kinetics in an independent, safe and responsible manner while conducting an experiment, and communicate about it with a log/results sheet according to the applicable guidelines.

You describe and use concepts such as energy, heat, work, enthalpy, entropy, free energy and chemical potential in a chemical or chemical-technological context, and calculate the change in these quantities in processes involving changes in pressure, temperature, volume and/or phase state.

You describe realistic chemical reactions in terms of free energy, enthalpy and entropy, and you predict the location of chemical equilibrium as a function of output composition, pressure and temperature, using tabulated values of the formation enthalpy and absolute entropy.

Content

This module provides an in-depth understanding of chemical thermodynamics and reaction kinetics, crucial concepts for a chemist in his daily work. You will learn the methods to calculate the location of chemical equilibria and gain insight into the (im)possibilities to influence this equilibrium. You will also learn how quickly this equilibrium is reached.

Specifically, the module covers topics such as reaction heat, chemical work, Gibbs free energy and the location of chemical equilibria, with a strong focus on their application in chemical reactions. In addition, aspects of the process industry are covered, such as mixing and the compression and expansion of gases.

The section on reaction kinetics provides an introduction to the kinetics of chemical reactions, allowing you to develop a complete understanding of both the thermodynamic and kinetic aspects of chemical processes.

Included in programme(s)

Chemistry

School(s)

Engineering, Life Sciences & ICT

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