

IDENTIFICATION

Course code : E1CP2PC5
ECTS : 2

DURATION

Lectures : 14
Tutorial classes : 16
Labs : 8
Total : 38

Project :
Personnal work :

ASSESSMENT

TEACHING MATERIALS

Materials available on the Moodle platform.

LANGUAGE

English

CONTACT

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UE : PHYSIQUE-CHIMIE

COURSE : Evolution of a chemical system

SCOPE OF THE COURSE

OBJECTIVES

Predict the evolution of a chemical system : Is the system at equilibrium ? How fast will the system evolve ?

COMPETENCE AND SKILLS

- Know how to define state functions H, S, and G
- Know how to define a reaction quantity
- Know how to calculate a reaction enthalpy from standard enthalpies of formation
- Know how to calculate a reaction entropy from standard entropies of pure substances
- Know how to relate the sign of the reaction enthalpy to the exothermic/endothermic nature
- Know how to relate the sign of the reaction entropy to the variation in the number of moles of gas
- Know how to predict the evolution of a system based on the reaction Gibbs free energy
- Know how to define the terms homogeneous and isothermal
- Know how to define the rate of appearance of a product/rate of disappearance of a reactant
- Know how to define the (intensive) reaction rate
- Know how to present kinetic factors
- Know how to define a catalyst
- Know the different types of catalysis
- Know how to describe the mode of action of a catalyst
- Know how to describe the selectivity of a catalyst
- Know that the rate of certain reactions can take a particular form
- Know how to define the terms partial order and overall order
- Know how to differentiate overall order and current order
- Know how to define simple and complex reactions
- Know that a kinetic study aims to determine the rate constant and the orders
- Know how to describe the differential method
- Know how to describe the integral method
- Know how to apply the integral method to reactions of order 0, 1, and 2
- Know how to use the half-life to determine a partial order
- Know how to state Arrhenius' law
- Know how to use experimental results to determine the activation energy
- Know how to define the terms endothermic and exothermic

PROGRAM

1. Elements of thermochemistry
2. Chemical kinetics (formal kinetics without MR)

BIBLIOGRAPHY REQUIREMENTS