UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Physical Chemistry II and Laboratory

2526-2-E2702Q089

Aims

To integrate the learning of thermodynamics and kinetics

Contents

The course is based on the execution of physical chemistry experiments, which provide manual skills and methodologies useful for deepening learning of thermodynamic and kinetic arguments.

Detailed program

Laboratory experiments: Calorimetric measurements of phase transitions. Heat combustion determination by calorimetric bomb. Rate law determination. Determination of kinetic reaction parameters by conductimetric methods and UV-vis spectroscopy. Determination of thermodynamic reaction parameters by UV-vis spectroscopy.

Prerequisites

Basic knowledge of thermodynamics and kinetics. Basic knowledge of mathematics

Teaching form

Laboratory activities and exercises in computer classroom (interactive teaching)

Textbook and teaching resource

Lecture notes

Semester

2nd semester

Assessment method

Oral examination supported by the analysis of a laboratory report prepared in advance by the student. Questions will regard the discussion of experimental techniques in the following fields:

- calorimetric measurements of phase transitions

- heat combustion determination by calorimetric bomb

- rate law determination and determination of kinetic reaction parameters

- determination of thermodynamic reaction parameters by UV-vis spectroscopy.

The underlying theoretical principles are also object of the oral examination.

The following level of judgment is applied in relation to the following parameters:

Conceptual knowledge and understanding ability
Ability to apply knowledge and understanding
Communication and argumentation skills
Learning, self-assessment and self-regulation skills
18-19: Limited ability in discussion and analysis; inconsistent expository competence and terminology, with limited critical thinking skills.

20-23: Ability to analyze autonomously only in purely practical and executive matters; correct, though not entirely precise and clear, use of terminology; somewhat uncertain expository competence.

24-27: Ability to independently develop arguments and critical analysis; capacity to apply knowledge to different contexts and connect topics to real cases; correct use of terminology and proficiency in disciplinary language.

28-30/30L: Strong ability to independently discuss and critically analyze topics; ability for reflection and self-reflection, connecting topics to real cases and different contexts; excellent critical and independent thinking skills; full command of disciplinary terminology and a rigorous, well-structured expository ability; strong argumentative and reflective skills, with the ability to establish interdisciplinary connections.

Office hours

On appointment (by email request)

Sustainable Development Goals