



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## SYLLABUS DEL CORSO

### Chimica Fisica II e Laboratorio

2526-2-E2702Q089

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#### 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**

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