



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## SYLLABUS DEL CORSO

### Chimica Generale

2425-1-E1301Q009

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#### Aims

- Introduction to chemistry (language and methodologies)
- Knowledge of the basic chemical principles important to study biological processes

In particular, the course of General Chemistry will give the students the basis of chemistry, focussed on biological systems.

#### 1. Knowledge and understanding

The student will gain knowledge of the chemical principles at the basis of general chemistry useful for the comprehension of biological systems.

#### 2. Applying knowledge and understanding

The student will be able to apply the knowledge acquired under 1. to the subsequent subjects, especially organic chemistry and biochemistry.

#### 3. Making judgements

The student will be able to process the acquired knowledge in general chemistry towards its application to the interpretation of basic chemical issues in living systems.

#### 4. Communication skills

Use of an appropriate scientific/chemical vocabulary and ability in oral reports

#### 5. Learning skills

Skills in reading and understanding the subsequent studies needing a solid generalchemistry basis, skills in the application of general chemistry knowledge to other subjects requiring basic chemistry prerequisites.

#### Contents

Structure of matter

Aggregation states of matter  
Control of chemical reactions  
Chemistry of water solutions  
Electrochemistry

## Detailed program

Structure of matter

- Atomic structure and description of subatomic particles.
- Electronic configurations of atoms and periodic properties.
- Chemical bonds. Lewis structures. VSEPR theory. Atomic and molecular orbitals.

Aggregation states of matter

- Gases
- Liquids
- Solids
- Solutions

Reaction rates

- Rate of reactions and factors affecting rate of reactions. Catalysis.
- Thermodynamics.
- Chemical equilibria.

Chemistry of water solutions

- Acids and bases
- pH, pOH e pK<sub>w</sub>. Calculations of pH in different water solution.
- Coordination chemistry
- Redox reactions

Electrochemistry

- Electrochemical cells. Nerst equation.

## Prerequisites

Elementary Mathematics and Physics

## Teaching form

32 2 hours-lectures of delivered didactics (Didattica erogativa, DE) focused on the presentation-illustration of contents by the lecturer.

Didactic activities are conveyed by means of face-to-face lectures.

## Textbook and teaching resource

- Chimica - J.C.Kotz, P-Treichel Jr. - EdiSES
- Slides can be found at the Moodle webpage related to the teaching module

## **Semester**

First semester

## **Assessment method**

Written examination where the student has to solve some numerical problems about stoichiometry and answer one or more open theoretical question.

Oral examination where topics presented during lessons are discussed.

Partial examinations are not available.

## **Office hours**

Monday 15:30-17:30

## **Sustainable Development Goals**

LIFE ON LAND

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