UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

General Chemistry

2122-1-E1301Q009

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 pKw. Calculations of pH in different water solution.
- Coordination chemistry
- Redox reactions

Electrochemistry
- Electrochemical cells. Nerst equation.

Prerequisites

Elementary Mathematics and Physics

Teaching form

Frontal Lessons alternated with exercises on the subjects carried out.

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 theoretical question.
Oral examination where topics are discussed from a theoretical standpoint.

Office hours

Monday 15:30-17:30