UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

General Chemistry Laboratory

2627-3-E1301Q084-E1301Q081M

Aims

The Organic Chemistry module allows the student to become confident with analytical and preparative chromatographic techniques and with reactivity of organic compounds applied to biological systems.

1. Knowledge and understanding.
At the end of the course, students will know basic theory and experimental of chromatography and chemical transformations of organic compounds.

2. Ability to apply knowledge and understanding.
At the end of the course, students will be able to apply the acquired knowledge to organic compounds transformation and purification.

3. Making judgements.
At the end of the course, students will be able to process what they have learned to general experimental methodologies.

4. Communication skills.
At the end of the course, students will be able to process the experimental data obtained and to describe the procedures and the results, using the most appropriate technical vocabulary.

5. Learning skills.
At the end of the course, students will be able to apply basic experimental techniques of the organic chemistry lab to biomolecules.

Contents

The experiences of general chemistry laboratory consist of experiments in the field of determination of solute

concentration in diluted aqueous solutions using basic techniques of quantitative analytical chemistry.

Detailed program

The general chemistry module will be organised in 5 experimental lab sessions, focussed on the following techniques and methodologies:

Acid-base titration of hydrochloric acid with sodium carbonate with methyl orange indicator; Redox titration of hydrogen peroxide with a solution of potassium permanganate standardized with sodium oxalate; Iodometric titration of commercial sodium hypochlorite (bleach) with sodium thiosulfate; Acid-base pHmetric titration of phosphoric acid in an unknown solution and in coca-cola with sodium hydroxide; Determnination of the isoelectric point of glycine; Colorimetric analysis of a diluted solution of Fe2 +.

Prerequisites

Basic general chemistry and stoichiometry

Teaching form

Laboratory experimental activities conducted in equipped laboratories.
Four laboratory activities, 5 hours each, consisting of 1 hour of delivered teaching and 4 hours of Interactive Teaching. Attendance is mandatory
Teaching language: italian.

Textbook and teaching resource

Slides and experimental protocols, illustrative videos and self-assessment tests will be made available on the e-learning platform.

Maurizio Bruschi, Stechiometria e laboratorio di chimica generale. eserciziario. ediz. Pearson, 2023

Semester

Second semester

Assessment method

For the general chemistry laboratory course, the exam is conducted exclusively through a single, 2-hour computer-

based written test in the IT lab covering all 6 modules with no midterms, consisting of closed-ended questions worth a maximum of 10 points per module (which are then automatically converted by the system into a maximum of 29 points) and a single open-ended question worth 0 to 2 points that is graded by the professors only if a minimum score on the closed-ended section is reached, resulting in a final grade out of thirty calculated by summing the two scores, with honors awarded for an overall result of 30.5 or higher.

Office hours

The teachers will receive by appointment requested by e-mail.

Sustainable Development Goals

GOOD HEALTH AND WELL-BEING