UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

General Chemistry Laboratory

2021-3-E1301Q077-E1301Q081M

Aims

Knowledge and understanding. At the end of the course the student will have consolidated and deepened basic knowledge (theoretical, technical and methodological) already the subject of theoretical frontal courses of each discipline. Ability to apply knowledge and understanding. At the end of the course the student will be able to correctly interpret the experimental protocols already practiced, to recognize the salient aspects, to collect and process experimental data. Autonomy of judgment. Among the objectives of the course there is the development of a critical vision of the experimental design and of the results achieved. The student must be able to recognize the contexts in which it is appropriate to apply experimental and re-elaboration methods of the data used during the various teaching modules. Communication skills. At the end of the course the student will be able to re-elaborate the experimental data obtained and present them in the most appropriate way (graphs, tables, numerical indexes, etc.). It is expected that the student can describe the results achieved in an appropriate language and with the technical terms typical of each subject area covered by the teaching. Learning ability. The student will be able to correctly interpret experimental protocols similar to those already practically performed, the application of which is required in contexts different from those already faced during practical laboratory experiences. It is also expected that from this experience students will be interested in research activities and greater awareness of their attitudes.

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

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

Lab experimental activities in equipped labs.

Textbook and teaching resource

slides from the Elearning platfom

Semester

First semester

Assessment method

Written test focussed on all teaching modules: the exam will be aimed at the evaluation of acquired competences in all disciplines involved. The ability to elaborate and integrate the experimental work with the theoretical basis of the experiments, and the development of interdisciplinary links will be evaluated.

The assessment will be organised in six sections, with open questions and multiple choice tests. In order to pass the exam it is necessary that the student has an evaluation greater than or equal to 18 in all the disciplines. In the event that the student does not achieve sufficiency even in one discipline, the test must be re-supported in full. The duration of the assessment will be 2 hours.

Office hours

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