UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Laboratory of General and Inorganic Chemistry

2627-1-E0202Q048-E0202Q04801

Aims

The laboratory is aimed at learning the basic techniques used in a chemistry lab in general and inorganic chemistry, applying the basic theoretical concepts of acid-base and redox chemistry. The student also learns some safety and behavior rules in a chemistry laboratory.
Ability to apply knowledge and understanding. At the end of the course, students will be able to use the basic techniques of the chemical laboratory (preparation of solutions, transfer of quantities) and apply them in basic techniques of analytical chemistry (titers).
Ability to apply knowledge and understanding. At the end of the laboratory the student will be able to correctly interpret the analytical chemistry bade analysis results, to recognize the salient aspects and to collect and process experimental data.
Independent Judgment. One of the objectives of the laboratory course is to develop a critical understanding of basic analytical chemistry techniques and their results through laboratory experiments and written reports.
Communication skills. At the end of the workshop the student will be able to re-elaborate the experimental data obtained through the basic techniques of analytical chemistry and present them in the most appropriate way (graphics, tables, etc.) with an appropriate language and with the appropriate typical technical terms.
Learning ability. The student will be able to discuss the results obtained from basic analytical chemistry analysis whose application is required for the determination of the unknown concentration of a solute in dilute aqueous solution. It is also expected that these laboratory experiments may be of interest to the student in understanding what his / her attitudes towards scientific experimentation.

Contents

The 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 practical lessons consist of 6 experiments.
- 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 acetic acid with sodium hydroxide;
- Acid-base pHmetric titration of phosphoric acid in an unknown solution and in coca-cola with sodium hydroxide.
- Colorimetric analysis of a diluted solution of Fe2+.

Prerequisites

Background: basic knowledge of stoichiometry and general and inorganic chemistry.
Prerequisites: none

Teaching form

Laboratory experimental activities conducted in equipped laboratories.
Six 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

Learning material (to help students carry out lab experiences) will be provided in lab
at the beginning of each single experience. Supplementary materials and additional resources will also be available on the course's e-learning page. Also see M. Bruschi, "Stechiometria e laboratorio di chimica generale" Pearson

Semester

Second semester

Assessment method

Written examination in the form of lab reports.
The student will be evaluated according to two criteria: the first concerns the judgment that has
been formed on the basis of the "practical skill" level that students have achieved; the second deals with the evaluation of reports that students will have to prepare at the end of the course. Such reports will be focused on both formal and practical issues of each single experience.

Office hours

Contact: on demand, upon request by mail to lecturers

Sustainable Development Goals

QUALITY EDUCATION