UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Basic Chemistry For Materials Science

2021-1-F5302Q034

Aims

The course aims to provide the knowledge of general, inorganic and organic chemistry necessary for students who have not acquired them in their first level courses.

Contents

Basic course of general, inorganic and organic chemistry.

The general and inorganic chemistry deals with the fundamental aspects of chemistry, with the aim to relate the physical properties of the materials with their chemical composition. The main chemical phenomena (reactions, equilibria, ph), as well as some basis of stoichiometry, will be also addressed.

In organic chemistry the structural aspects, the weak bonds responsible for molecular interactions and the covalent bonds that give rise to polymeric structures of interest for materials sciences will be addressed.

Detailed program

The atomic theory. Formulas and nomenclatures of binary and ternary compounds. Fundamental notions of stoichiometry. Stoichiometry in solutions: concentration and molarity. Chemical reactions and balance. Electronic configuration of atoms and ions. Periodical properties in chemistry. Ionic, covalent and metallic bonds. The shape of the molecules and the VSEPR theory. Molecular orbital theory. Chemical properties of condensed matter. Properties of solutions. Thermodynamics and kinetics of chemical reactions. Chemical equilibria: acid-base, precipitations and redox.Q

General aspects of organic chemistry: Atoms in organic chemistry and their electronic equipment. Hybridizations of carbon atoms. Molecular orbitals, hybrid orbitals. Structure representation.

Prerequisites

none

Teaching form

Remotely asynchronous with events in synchronous videoconference.

Textbook and teaching resource

Any textbook of general and inorganic chemistry

Any textbook of basic organic chemistry

Semester

First semester

Assessment method

Oral examination. During the Covid-19 emergency period, oral exams will only be online. They will be carried out using the WebEx platform and on the e-learning page of the course there will be a public link for access to the examination of possible virtual spectators.

Office hours

Inorganic Chemistry, Monday 11,00 (upon previous arrangement by email)

Organic Chemistry, Thursday 12,30