UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Chimica

1819-4-G8501R036-G8501R036M

Course title

Chemistry

Topics and course structure

The course focus on basic chemical concepts. The micro- and macroscopic world. The matter composition, the structure of the atom, the periodic properties of elements, the aggregation states, the chemical bond, the properties of molecules (acid-base behaviour, solubility, hydrophilicity/hydrophobicity).

The course is organized in frontal lessons and experimental classroom activities for elementary school students.

Objectives

This course, through a constant and participated attendance to the lessons and the Laboratory, has the aim to promote the following learning skills:

Knowledge and understanding of basic chemical concepts

Ability to relate differentiated knowledge and models

Ability to apply knowledge and models to the experimental world

Methodologies

Lectures, readings of selected texts, discussion in class.

Experiments made at home, analysis of experimental data and observations made, discussion on how communicate to students of elementary school basic concepts of chemistry through the elaboration of the results of practical experiences.

Online and offline teaching materials

Lessons are on power point slides uploaded on the E-learning site, books (paper and electronic), internet sites

Programme and references for attending students

Program:

1) Basic concepts of modern chemistry: - Macroscopic and microscopic; - The composition of the matter; - Aggregation states of the matter

2) Atomic structure and periodic properties of the elements; - The chemical bond and properties of molecules.

3) Chemical experiences as a starting point for educational paths: A: Hydrophilicity and hydrophobicity; B: Solubility; C: Acidity and basicity; D: Reactivity.

4) Educational paths for primary school: Summary of the experiences carried out; Generalization on the ways of learning from experience; General outline of the educational method; Proposals for educational methods to be developed individually.

Bibliography:

1) Laura Cipolla, The notebooks of teaching. Methods and tools for teaching and learning chemistry. EDISES.

2) Philip Ball, Elements.

3) Peter Atkins, The Periodic Kingdom

4) Aldersey-Williams Hugh Periodic Fables

5) Primo Levi, The periodic table

Programme and references for non-attending students

The programme and the bibliography are the same than for attending students.

Assessment methods

Written and oral exam

The written exam consists of a multiple test of closed questions, aimed at ascertaining the

knowledge of the basic biology concepts, and a set of open questions to understand communication skills of the student.

The oral exam will start from the written test, and will then extend to the verification of the knowledge of the whole program and of what has been learned in the laboratories.

Office hours

Thu 2-3 PM

Programme validity

two academic years

Course tutors and assistants

Prof. Laura Cipolla

Dr. Andrea Luraghi