UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Organic Chemistry

2122-1-E2701Q035

Aims

The teaching of Organic Chemistry is organized in the first two years of the degree course between this course, in the first year, and the course of the Laboratory of Organic Chemistry, in the second year. The overall objective of the two courses is to provide the student with the theoretical and practical bases of Organic Chemistry necessary to face the subsequent study of organic and hybrid materials.

Knowledge and understanding

At the end of the course the student knows:

- The main concepts related to the study of organic chemistry

- The main classes of organic substances (see list in the detailed content)

- The main properties and reactions of the organic substances listed in the detailed content

Applying knowledge and understanding

At the end of the course the student is able to:

- Have the basic knowledge on the organic substances listed in the detailed content

- Apply the main reactions of the organic substances listed in the detailed content

Making judgments

At the end of the course the student is able to:

- Recognize the main structural and chemical properties of the organic substances listed in the detailed content

- Apply the main reactions on the organic substances listed in the detailed content

Communication

Knowing how to describe in a clear and concise way in writing and orally with the language properties the main concepts of organic chemistry and the properties and reactivity of the main organic substances

Lifelong learning skills

Be able to deal with the study of other classes of organic substances and apply the study to the main classes of organic and hybrid materials, therefore also in different contexts from those presented during the course. Being able to extend knowledge independently through the study and analysis of advanced texts in Organic Chemistry and Organic Materials, in the scientific literature, patents and scientific-technical reports.

Contents

Basic concepts and description of main organic families.

Detailed program

1) References of general chemistry. The electronic structure and the covalent bond. 2) Acids and bases. 3) Introduction to organic compounds. 4) Isomers and arrangement of atoms in space. 5) Alkenes. 6) Reactions of alkenes and alkynes. 7) Delocalized electrons and their effects on stability, reactivity and pKa. Aromaticity - Reactions of benzene and substituted benzenes. 8) Reactions of substitution and elimination of alkyl halides.

Prerequisites

General and inorganic chemistry (1st year)

Teaching form

Lectures and exercises in lecture room

Activities in lecture room will be recorded and made available to students in agreement with University and CCD directions.

Textbook and teaching resource

P. Y. Bruice, Elements of Organic Chemistry, Edises

Semester

First year, second (spring) semester

Assessment method

The student can attend the exam following one of the two options:

a) Two partial written tests during the course + final oral exam.

The partial tests focus on the topics covered in class up to the test date (the detailed list of topics is described by the teacher). As a rule: First partial test. 1) References of general chemistry. The electronic structure and the covalent bond. 2) Acids and bases. 3) Introduction to organic compounds. 4) Isomers and arrangement of atoms in space; Second partial test: 5) Alkenes. 6) Reactions of alkenes and alkenes. 7) Delocalized electrons and their effects on stability, reactivity and pKa. Aromaticity - Reactions of benzene and substituted benzenes. 8) Reactions of substitution and elimination of alkyl halides. The distribution of the contents of the two partial tests may vary from year to year.

Each partial test give a vote (from 0 to 30). The arithmetic average of the written tests is the admission score to the oral test, which consists in an exam lasting about 15 minutes focused on the shortcomings presented at the level of the written partial tests.

This procedure is allowed only for students who pass the written tests with at least 15/30 and attend the oral exam at the first exam following the end of the lessons. The dates of the partial written tests are communicated well in advance both in the classroom and in the e-learning page of the course. The first partial test takes place approximately one half of the course. The second test immediately after the end of the semester.

b) Single oral exam. The single oral exam can be taken in any of the calls during the year. There are no limitations in the event of not passing the exam (however, in the case of largely insufficient preparation the teacher can request to skip 1 appeal when the following exam is scheduled a few days after the insufficient test). The single oral exam covers some questions covering all the topics covered in the course. The duration is about 1 hour.

The oral exam can contain written parts (blackboard, on paper) in front of the examining commission.

The partial written tests and the oral test (including the written part) are aimed at verifying: the level of the acquired knowledge; autonomy of analysis and judgment; the student's exhibition skills; the correctness and clarity of the exposition and description of the concepts and knowledge both orally and in writing.

It is mandatory to register for the partial written tests and the oral tests on the official appeals board. Non-enrolled students will not be admitted to the exams.

DATA

Data collected since academic year 2011-12

Average for the 1st written test: 21.5/30

Average for the 2nd written test: 21.4/30

Average for the written test (average of I and II test): 22.1/30

Average of the final exam (written + oral): 24.6/30

Office hours

All days from Monday to Friday upon e-mail request