
COURSE: Organic Chemistry / Part B

ACADEMIC YEAR: 2016-2017

TYPE OF EDUCATIONAL ACTIVITY: Basic

TEACHER: Prof. Brigida Boichicchio

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phone: 0971-205481

mobile (optional):

Language: Italian (English on request)

ECTS: 6 (6 of lessons)

n. of hours: 48 (48 of lessons)

Campus: Potenza
Dept. Science
Program: Pharmacy (LM-13)

Semester: I

EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES

The aim of the course is to complete the knowledge of Organic Chemistry/A Part by the study of common reaction mechanisms and main classes of natural macromolecules. The final goal is to give to the student the basic knowledge of organic chemistry necessary for subsequent study of biochemistry and pharmaceutical chemistry.

After having completed the course, the student should:

- 1) Demonstrate knowledge of fundamental contents in the basic areas of organic chemistry;
- 2) Understand the relationship between structure and function of molecules, the major classes of reactions, reaction energetics and mechanisms;
- 3) Integrate knowledge with critical thinking to solve synthetic problems;
- 4) Articulate scientific information through oral communication;
- 5) Articulate scientific information through written communication.

PRE-REQUIREMENTS

In order to understand Organic Chemistry, the student should have good knowledge of the basic principles of General Chemistry and Physics.

SYLLABUS

1. Phenols: Naming, properties, preparation, reactions of pharmaceutical interest (Aspirin).
2. Carbonyl Compounds: General reactions, preparation, nucleophilic addition reactions of aldehydes and ketones, nucleophilic addition of amines, the Wolff-Kishner reaction, the Wittig Reaction.
3. Carboxylic Acids. Naming, structure and properties, acidity, preparation, reactions.
4. Carboxylic Acid Derivatives. Nucleophilic acyl substitution reactions, chemistry of acid halides, esters, amides. Carbonyl Alpha-Substitution Reactions. Keto, enol tautomerism, mechanism of alpha-substitution reactions, alpha-halogenation of aldehydes and ketones, alpha bromination of carboxylic acids. Carbonyl Condensation Reactions. The Aldol reaction, Claisen Condensation reaction, other biological carbonyl condensations.
5. Amines. Physical and chemical properties. Preparation: The Gabriel synthesis, Hofmann degradation of amines. Reactions with nitrous acid. Diazonium salts: structure, stability. Coupling reaction and azocompounds (dyes).
6. Natural macromolecules: Aminoacids, Peptides
7. Natural macromolecules: Carbohydrates
8. Natural macromolecules: Lipids, Nucleic Acids

TEACHING METHODS

- Frontal lessons

EVALUATION METHODS

The aim of the final examination is to evaluate the level of achievement of the educational goals .

The final examination consists of an oral examination concerning the contents of part A and B.

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL

- G. Solomons, Chimica Organica; Zanichelli

Course slides will be available from a shared Dropbox folder, whose link will be furnished to the students attending the classroom. Furthermore, links to websites, where exercises are available, will be provided.

INTERACTION WITH STUDENTS

At the beginning of the course the teacher will describe the educational goals, the syllabus and the examination methods to the students and ask for the institutional e-mails of the attending students. All course information will be sent to the provided email addresses.

Office hour: on Wednesday and Thursday from 16.00 to 17.00; alternatively, by email appointment

EXAMINATION SESSIONS (FORECAST)

27/02/2017; 19/06/2017; 24/07/2017; 04/09/2017;25/09/2017;06/11/17.

SEMINARS BY EXTERNAL EXPERTS YES ☐ NO ☒

FURTHER INFORMATION

Students are strongly encouraged to attend all lessons.
