Organic chemistry (Ist Year of study, Ist Semester)

Credit value (ECTS) 4

Course category
Fundamental (Compulsory)

Course holder:
Assist. Prof. PhD. Antoanela PATRAS

Discipline objectives (course and practical works)

The aim of the course is to have students acquire knowledge on the main types of organic compounds, distribution and importance, physical and chemical properties.

The practical training seek to familiarize students with the working techniques in the chemical laboratories and the correct application of analytical methods of the main compounds.

Contents (syllabus)

Course (chapters/subchapters)
Introduction to organic chemistry Importance of organic chemistry Elemental composition and structure of organic molecules. Classification of organic compounds
Hydrocarbons Saturated hydrocarbons. Structure. Properties. Representatives. Unsaturated hydrocarbons. Structure. Isomers. Properties. Representatives. Aromatic hydrocarbons. Classification. Structure. Isomers. Properties. Representatives.
Hydroxyl compounds. Alcohols. Examples, structure, properties. Sterols. Classification. Examples. Phenols. Structure, properties, natural representatives. Enols.
Ethers. Structure. Preparation. Properties. Representatives
Amines. Structure. Properties. Food representatives
Carbonyl compounds. Classification. Structure. Properties. Representatives.
Carboxylic acids. Classification. Structure. Physical and chemical properties. Food representatives
Functional derivatives of carboxylic acids. The main classes. Examples. **Esters**. Structure. Synthesis. Properties. Natural esters. Synthetic esters. **Amides.** Structure. Properties.
Organic compounds with mixed functions Amino acids. Aminoalcohols. Hydroxy acids. Hydroxyaldehydes and hydroxyketones
Heterocyclic compounds. Classification. Characterization of the main classes. Natural representatives (auronic pigments, biotin, pyrrole derivatives, serotonin, porphine, coumarin, flavones, anthocyanins, etc.)

Practicum
General information concerning chemical analysis of organic compounds. Isolation and purification of organic compounds.
Qualitative elemental analysis of organic compounds.
Quantitative elemental analysis of organic compounds.
Determination of the molecular formula and the structure of organic compounds
Double bond reactions (addition, oxidation) and aromatic ring reactions
Alcohols. Demonstration of the acidic character. Alkoxide synthesis. Oxidation.
Other specific reactions of hydroxyl compounds.
Amines - chemical properties (highlighting of basic character, acylation).
Carbonylic compounds. Colour reactions. Other specific reactions of aldehydes.
Organic acids. Chemical reactions.
Esters. Synthesis and specific chemical reactions
Organic compounds with mixed functions. Identification and determination of amino acids.
Spectrophotometric analysis of anthocyanin pigments
Final laboratory test.

Bibliography

Vicaş S. I. – Chimie organică şi biochimie, Academic Pres, 2008
Iordache F., Iordache A., Costea I., Bidulescu A. - Indrumar de laborator chimie organică, Printech, 2000;
Ifrim S. – Chimie generală, Ed. Didactică şi Pedagogică, Bucureşti, 2003
Afusoae I., Savu M., Patraş A. - Chimie lucrări practice, USAMV Iasi, 1996;

Evaluation

Evaluation form	Evaluation Methods	Percentage of the final grade
Exam	Writing - test examination	60%
Appreciation of the activity during the semester	Oral and practical assessment during the semester, verification tests and final laboratory colloquium.	40%

Contact

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