



ФАРМАЦЕВТИЧЕН ФАКУЛТЕТ МЕДИЦИНСКИ УНИВЕРСИТЕТ - СОФИЯ

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Approved from the Faculty council with protocol: No 3/20.04.2023 г.

DEAN:
(prof. Al. Zlatkov, DSc)

DEPARTMENT OF CHEMISTRY

SYLLABUS

of Organic Chemistry

INCLUDED IN "PHARMACY" EDUCATION CURRICULUM.

DEGREE OF EDUCATION: "MASTER"

CREDITS (ECTS): 15

SYLLABUS

SCHOOL SUBJECT: **ORGANIC CHEMISTRY**

INCLUDED IN THE CURRICULUM OF: **MASTER OF PHARMACY**

DEGREE OF EDUCATION: **MASTER**

CREDITS (ECTS): **15**

DEPARTMENT: **CHEMISTRY**

ANNOTATION:

During the lecture course of organic chemistry, the students expand and deepen their knowledge of the discipline. In addition, they are taught new thematic units such as the theory of the aromatic structure, the basic principles of the IUPAC systematic nomenclature, the spectral methods for structure elucidation. Particular attention is paid to that part of the curriculum which is crucial for the special knowledge of future masters of pharmacy: alcohols and phenols, aldehydes and ketones, stereochemistry, carbohydrates, amines, carboxylic acids, heterocyclic compounds, peptides, nucleic acids, nucleosides, alkaloids. The reactivity

of individual classes of organic compounds, their spectral characteristics, as well as the mechanisms of the most important organic reactions are examined. Most often, the given examples are connected with the syntheses of products with biological activity or substances that are used as raw materials, intermediate compounds or reagents in the preparation of medicines. Due to the chirality of the biological systems, particular attention is paid to the stereochemistry. The program is enriched with a number of modern examples of asymmetric synthesis. The aim of the course is to lay the theoretical foundations for the training of future masters of pharmacy.

The practical exercises of organic chemistry in the III-IV semester have the main task of preparing students for organic synthesis experimental work, and consolidation of the lecture material. The first goal is achieved by practical implementation of the methods for isolation, purification and characterization of organic compounds, as well as by obtaining organic compounds according to literature procedures. At the beginning of the experimental exercises is conducted examination on the laboratory methods and techniques. The synthesized compounds are selected to cover a larger number of classes of organic substances; various methods and equipment are used for carrying out the reactions, the isolation and the purification of the products. Some of the synthesized compounds are medicinal substances or are related to medicinal chemistry.

In parallel, seminar classes are held. Their subjects follow the lecture course. If necessary, theoretical questions are further clarified. Tasks that support the assimilation of the lecture material and develop combinative thinking by applying the acquired knowledge are solved. During the exercises, four colloquiums (two per semester) are scheduled.

Type of control and evaluation: routine control- 4 (four) colloquium, two per semester, academic year exam – written and oral.

English language training

SYLLABUS

1. Introduction.
2. Chemical bonds.
3. Classification and nomenclature of organic compounds
4. Alkanes and cycloalkanes.
5. Principles of stereochemistry.
6. Alkenes and Cycloalkenes.
7. Alkynes and dienes.
8. Arenes (Aromatic hydrocarbons).
9. Theory for the orientation effect of the substituents in the aromatic ring in the electrophilic substitution reactions.
10. Halogen derivatives of the hydrocarbons.
11. Alcohols and phenols.
12. Ethers and epoxides.
13. Aldehydes and ketones.
14. Carboxylic acids.
15. Functional derivatives of the carboxylic acids.
16. Structure elucidation of the organic compounds using physical methods.
17. Acetoacetic and malonic esters.
18. Aliphatic and aromatic amines.
19. Carbohydrates.
20. Heterocyclic compounds. Introduction in heterocyclic chemistry.
21. Pentaatomic heterocycles with one heteroatom.
22. Condensed pentaatomic heterocycles with one heteroatom.
23. Hexaatomic heterocycles with one nitrogen atom.
24. Condensed hexaatomic heterocycles with one nitrogen atom.
25. Oxygen containing heterocycles.
26. Pentaatomic heterocycles with two heteroatoms.
27. Hexa- and heptaatomic heterocycles with two heteroatoms.
28. Condensed heterocyclic systems with two heteroatoms each.
29. Amino acids. Peptides. Nucleotides.
30. Synthetic polymers.

Date

Program author:

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