

Abstract of the discipline "Organic chemistry"

This course is intended for training specialists at the Russian-Armenian University with a degree in bioengineering and bioinformatics.

The academic discipline "Organic Chemistry" is a compulsory component in the training of specialists in biomedical areas and, in particular, in the specialty of bioengineering and bioinformatics. This discipline is basic for the development of not only organic chemistry, but also a number of other chemical disciplines, such as biological chemistry, bioorganic chemistry, pharmaceutical chemistry, as well as related disciplines that require knowledge of the basics of the structure and chemical transformations of organic compounds in vitro and in vivo, such as pharmacology, pharmacognosy, biotechnology and drug technology, which are necessary for the successful work of a specialist in bioengineering and bioinformatics.

The program is based on theoretical generalizations and classification of types of organic substances. These sections are the electronic structure of the carbon atom, hybridization, chemical bonds; spatial structure of organic compounds; mutual influence of atoms and ways of transferring this influence in a molecule using electronic effects; conjugation and aroma; acidity and basicity; mechanisms of organic reactions, as well as the nomenclature and isomerism of organic compounds. The selection of objects and examples was carried out from the position of including the most important classes of organic compounds in the program, as well as classes of substances that form the basis of the vital activity of natural organic substances. The program pays attention to such groups as: fats, lipids, carbohydrates, amino acids and peptides, steroids, heterocyclic compounds, gives an idea of alkaloids, terpenoids and synthetic bioregulators (drugs).

Attention is also paid to the formation of students' ideas about the relationship of the relationship between the concepts of "structure-properties".

An integral part of the program is material on the application of physical and chemical methods. To form correct ideas about the spatial structure of biologically active compounds, didactic materials and computer programs are used that provide a high level of clarity. The program is provided for 2 semesters and includes lectures, laboratory classes and seminars to consolidate the material, as well as independent work of students.

In the course, much attention is paid to the experimental work of students, in the process of which they must master the safety techniques of work in the laboratory of organic synthesis, experimental techniques, namely: synthesis, isolation, purification and identification of organic compounds, including those that are bioactive substances or intermediate products in their synthesis.

Independent work of students can include the solution of various problems that are close to professional activity and are designed to test the ability of students to apply knowledge of the reactivity of organic compounds to select the optimal synthesis, identification and analysis of these substances. It is recommended to take out separate fragments of the program for independent study.