

**ADDITIONAL EDUCATIONAL PROGRAM (MINOR)
«CHEMIST- PERFUMER»**

For whom it is intended: The program (Minor) "Chemist- perfumer" is available to all students of KNWTTU. First-year students are given an introductory course, and students are required to choose at least two courses from the list of subjects.

The program (Minor) "Chemist- perfumer" is intended for students of all major educational programs studying in the field of training «6B01507-Chemistry».

Relevance: In the Minor program "Chemist- perfumer" students can use knowledge in the field of technologies for the production of synthetic and natural medicines. Has the skills to study the economics of the pharmaceutical industry. Own the general principles of management and marketing of the pharmaceutical industry. Know analytical methods of drug synthesis and biological activity. Master the field of phytochemistry and the basics of chemistry. Mical research methods and practical skills of working on modern analytical equipment.

Justification: A future bachelor can take additional training courses on physical-chemical, perfumery-cosmetic laboratory research by choosing "Chemist-Perfumer" Minor. The program offers chemistry education at a high academic level based on an interdisciplinary approach.

Purpose: Formation of science-based principles and approaches among future specialists and in achieving a certain level of knowledge and skills necessary for their subsequent professional activities.

Program Description:

- 1.The program (Minor) "Chemist- perfumer" consists of 3 disciplines, each discipline has 5 credits, in total the student must master 15 credits.
- 2.The program (Minor) "Chemist- perfumer" does not require pre-requisites.
- 3.The number of credits for obtaining a bachelor's degree remains unchanged at least 240 credits.

Program content:

Name of the discipline	Description of the discipline	Teaching outcomes
Pharmaceutical and cosmetic technology (by industry)	Ability to formulate and solve problems in the field of pharmaceutical production technology, develop production regulations for the production of medicines, be able to organize, design, plan, supply chemical and pharmaceutical production.	LO 1 – can use knowledge in the field of technologies for the production of synthetic and natural medicines; LO 2 – has the skills to study the economics of the pharmaceutical industry, owns the general principles of management and marketing of the pharmaceutical industry; LO 3 – has the skills to study the economics of the pharmaceutical industry, owns the general principles of management and marketing of the pharmaceutical industry, knows analytical methods of drug synthesis and biological activity, master the field of phytochemistry and the basics of chemistry.
Technology of products from vegetable raw materials and perfumery and cosmetic products (by industry)	The course is aimed at introducing the basic principles of production of products from plant materials, perfumes and cosmetics, rational selection of drugs and excipients in dosage form, setting up machines and equipment for the pharmaceutical industry.	LO 1 – can use knowledge in the field of technologies for the production of synthetic and natural medicines; LO 2 – has the skills to study the economics of the pharmaceutical industry, owns the general principles of management and marketing of the pharmaceutical industry; LO 3 – has the skills to study the economics of the pharmaceutical industry, owns the general principles of management and marketing of the pharmaceutical industry, knows analytical methods of drug synthesis and biological activity, master the field of phytochemistry and the basics of chemistry.
Technology of essential oils and oils of the perfume and cosmetic industry	Technology of essential oils and oils of perfumery and cosmetic products, fields of application of essential oils in perfumery, cosmetics and medicine. Essential oils contain hydrocarbons, especially terpenes, alcohols, phenols, aldehydes, acids, esters, and some heterocyclic compounds. Essential oils	LO 1 – can use knowledge in the field of technologies for the production of synthetic and natural medicines; LO 2 – has the skills to study the economics of the pharmaceutical industry, owns the general principles of management and marketing of the pharmaceutical industry;

	<p>are found in many plants, and they all have a characteristic odor similar to essential oils. Essential oils are soluble in alcohol, ether, benzene, poorly soluble in water, most are practically insoluble.</p>	<p>LO 3 – has the skills to study the economics of the pharmaceutical industry, owns the general principles of management and marketing of the pharmaceutical industry, knows analytical methods of drug synthesis and biological activity, master the field of phytochemistry and the basics of chemistry.</p>
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