226 PHARMACY, INDUSTRIAL PHARMACY

educational-professional program of the second (master's) level

“PHARMACEUTICAL CHEMISTRY”

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Branch of Knowledge	22 Health Care
Specialty	226 Pharmacy, industrial pharmacy
The volume of the program	300 ECTS credits / 240 ECTS credits
Duration of the program	4 years 10 months / 3 years 10 months
The form of education	full-time / full-time, evening

The educational and professional program "Pharmaceutical Chemistry" is aimed at providing professional competences in the field of pharmacy and special competencies competences in the field of synthesis, pharmaceutical analysis and development, as well as on the ability to apply acquired knowledge, skills and competences in general and professional training disciplines to solve typical problems of practical work of a specialist in the corresponding position, including the synthesis of medicinal substances, manufacturing of medicines, their storage, provision and implementation of quality control of medicinal formulations in the conditions of the pharmacies and chemist`s shops and control-analytical laboratories of the State Service for Medicines of Ukraine; delivery, distribution, issuance, regulation of the provision of medicines, consulting, providing information about drugs and monitor side effects and / or ineffective drug therapy; providing students with knowledge, skills and understandings related to pharmacy, pharmaceutical analysis that will enable them to carry out their work professionally.

Features of the educational and professional program

The program focuses on providing professional competencies in the field of pharmacy and special expertise in the field of pharmaceutical analysis and development aimed to prepare a qualified specialist who possesses methods of pharmaceutical analysis, capable to conduct purposeful synthesis of biologically active substances, to establish their structure, to standardize pharmaceutical products, pharmaceutical development and validation of analytical methods, quality

control of medicinal products by modern physico-chemical methods and can engage in professional activities in pharmacies, pharmaceutical companies, chemist`s shops, storehouses, control-analytical laboratories, pharmaceutical factories, research institutes, clinical-diagnostic laboratories, chemico-pharmaceutical enterprises, biotechnological and microbiological services, sanitary-epidemiological control, custom service.

The high level of professional training is provided by a strong scientific and academic school of pharmacy and many years of experience, by the developed international cooperation in the scientific and educational spheres, and by the specialized laboratories.

The high level of the practical part of the training is provided by involving into educational-scientific process the teaching staff of the professional departments and leading specialists from the enterprises of the pharmaceutical sector of the health care sector. Professionals involved in professional and scientific training, have been trained in leading European universities, have international experience in educational and scientific activities.

Program components:

№	Name of the discipline
Compulsory disciplines	
1.	Analytical chemistry
2.	Human anatomy
3.	English language
4.	Drug technology
5.	Biology with the basics of genetics
6.	Biological chemistry
7.	Biopharmacy
8.	Biophysics, physical methods of analysis
9.	Military training
10.	Introduction into the specialty with familiarization practice
11.	Ethics and deontology in pharmacy
12.	Inorganic chemistry
13.	Clinical pharmacy and pharmaceutical care
14.	Latin language in pharmacy
15.	Medical and pharmaceutical commodities
16.	Microbiology with the basics of immunology
17.	Normal physiology
18.	Organization and economics of pharmacy
19.	Organic chemistry
20.	Pathological physiology
21.	The first pre-medical aid with familiarization medical practice
22.	Industrial technology of medicines

23.	Resource knowledge of medicinal plants
24.	Standardization of medicines
25.	Cosmetics technology
26.	Pharmacognosy
27.	Pharmacoeconomics
28.	Pharmacology
29.	Pharmacotherapy with pharmacokinetics
30.	Pharmaceutical botany
31.	Pharmaceutical Chemistry
32.	Pharmaceutical law and legislation
33.	Pharmaceutical marketing and management
34.	Physical and colloidal chemistry
35.	Physical Education
36.	Philosophy
Elective disciplines	
37.	Analysis of medicinal plant material and phytopreparations
38.	English language (in professional orientation)
39.	Bioactivity of inorganic compounds
40.	Bioethics and biosecurity
41.	Pharmaceutical bromatology
42.	Higher mathematics and statistical methods for processing the results of the experiment
43.	Hygiene in pharmacy
44.	Ethics is aesthetics
45.	Information technology in pharmacy
46.	Instrumental methods for the analysis of organic substances
47.	Culture of scientific language
48.	Logic
49.	Medical and analytical toxicology
50.	Medical botany
51.	Molecular modeling of potential APhI
52.	Good practice for quality assurance laboratories
53.	Nutritionology
54.	Basics of pedagogy
55.	Basics of rational use of drugs
56.	Basics of social psychology
57.	Basics of pharmaceutical development
58.	Basics of chemical metrology

59.	Labor protection and life safety
60.	Politology
61.	Applied aspects of fundamental medicine
62.	Psychology of communication
63.	Calculations in pharmacy
64.	Development and validation of analytical methods
65.	Quality systems in pharmacy
66.	Sorbents of medical purpose
67.	Sociology
68.	Modern analytical laboratory practice
69.	Modern problems of molecular biology
70.	Basics of biologically active substances synthesis
71.	Pharmacopoeial methods of analysis
72.	Pharmaceutical biotechnology
73.	Basic biochemistry
74.	Chemistry of elements and their compounds
75.	Chromatographic methods in the pharmaceutical analysis
Practical preparation	
76.	Practice in pharmacognosy
77.	Practice in drug technology
78.	Practice in organization and economics of pharmacy
79.	Practice in pharmaceutical marketing and management
80.	Practice in clinical pharmacy
81.	Practice in pharmaceutical chemistry
Attestation of graduates	
82.	Licensed Test Exam KROK-1
83.	Licensed Test Exam KROK-2
84.	Unified State Qualification Exam
85.	Defense of qualifying work

Employment and competitive advantage of graduates of the program

After training in an internship, a specialist is able to perform the professional work specified in SC 003: 2010 and may take the corresponding primary position:

2224.2 pharmacist;

2224.2 pharmacist-analyst.

Besides, the Master of Pharmacy, Industrial Pharmacy can work at the enterprises of the chemical and pharmaceutical industry, laboratories for quality control of medicines, analytical laboratories of pharmaceutical companies and

pharmaceutical certification centers, research institutes, clinical establishments of health care, institutions of higher education and branch offices of different departments, performing professional functions in accordance with duties.

Program learning results

To conduct professional activities in social interaction based on humanistic and ethical principles; to identify future professional activities as being socially important for human health. To apply knowledge of general and professional disciplines in professional activities. To adhere to the sanitary and hygiene regulations and safety requirements when carrying out professional activities. To demonstrate the ability to independently search, analyze and synthesize information from different sources and use these results to solve typical and complex specialized tasks of professional duties. To position his professional activities and personal qualities in the pharmaceutical market; to formulate goals of own activity taking into account social and industrial interests. To argue information for taking decisions, to be responsible for them in standard and non-standard professional situations; keep the principles of deontology and ethics in professional activities. Carry out professional activities using creative methods and approaches.To engage in professional communication in the state language, to use oral communication skills in a foreign language, to analyze professional texts and to translate foreign sources of information. To carry out professional activity using information technologies, "Information databases", navigation systems, Internet resources, software and other information and communication technologies. Keep the rules of communication in professional interaction with colleagues, management, consumers, to work effectively in a team.To use methods for estimating performance indicators; to identify reserves for improving labor productivity. To analyze information obtained as a result of scientific research, to generalize, systematize and use it in professional activity. To conduct sanitary-educational work in the professional activity in case of outbreaks of infectious, viral and parasitic diseases. To determine the advantages and disadvantages of medicinal products of various pharmacological groups taking into account their chemical, physico-chemical, biopharmaceutical, pharmacokinetic and pharmacodynamic characteristics.To recommend to consumers non-prescription drugs and other pharmacy products for advisory and pharmaceutical care. To conduct an adequate replacement of the medicinal product taking into account its affiliation with certain pharmacological and chemical groups. To provide an urgent pre-medical aid in emergency situations and to victims in extreme situations.To determine the influence of factors affecting the processes of absorption, distribution, depositing, metabolism and excretion of the drug and conditioned by the state, peculiarities of the human body and the physico-chemical properties of the drugs. To use data from clinical, laboratory and instrumental studies to monitor the effectiveness and safety of the use of drugs. To select biological objects of analysis, to carry out the determination of xenobiotics and their metabolites in biological samples, and to evaluate the obtained results, taking into account their distribution in the body, including for the purposes of pharmacokinetics and bioequivalence.To predict and to determine the influence of environmental factors on the quality of medicinal products and consumer

characteristics of other products of the pharmacy assortment during their storage. To implement a complex of organizational and managerial measures for provision of population and health care establishments with medicinal products and other goods of the pharmacy assortment. To carry out all kinds of accounting in pharmacy establishments, administrative paperwork, processes of commodity analysis. To calculate the main economic values of pharmacy`s activities, as well as taxes and fees.To create all types of prices (wholesale, retail, purchasing) for medicines and other products of the pharmacy assortment. To manage pharmaceutical companies and determine their effectiveness using management functions. To take managerial decisions based on the established leadership and communication skills of the pharmaceutical staff on strategic planning of enterprises. To take into account the data of socioeconomic processes in the community for pharmaceutical provision of the population, to determine the effectiveness and availability of pharmaceutical assistance in terms of medical insurance and reimbursement of drug costs. To plan and to implement professional activities on the basis of Ukrainian legal acts and recommendations of appropriate pharmaceutical practices. To promote health care, in particular prevention of diseases, rational prescription and use of drugs. To perform well professional duties, to keep the rules of legislation on promotion and advertising of medicines. To have the psychological skills of communication to achieve trust and understanding with colleagues, doctors, patients, and consumers.
To choose rational technology, to make medicines in different medical forms by prescriptions of doctors and orders of medical establishments, to issue them for release. To perform technological operations: weigh, measure, dose various medicines by weight, volume, etc. To develop and perform technological documentation for the manufacture of medicines in pharmacies. To base the technology and to organize the production of medicinal products at pharmaceutical companies and to perform technological documentation for the manufacture of pharmaceuticals at pharmaceutical companies. To organize and conduct rational harvesting of medicinal plant material. To develop and implement measures for the protection, reproduction and rational use of wild species of medicinal plants. To provide competitive positions and effective development of pharmaceutical companies on the basis of conducted research work on all elements of the marketing complex. To ensure quality control of medicines and to document its results. To management quality risks at all stages of the life cycle of drugs. To carry out quality control of medicinal products by chemical and physico-chemical methods in laboratory conditions, to choose the best methods of analysis, to interpret the results. To plan validation studies in accordance with the requirements of the current State Pharmacopoeia of Ukraine. To develop and validate an analytical methodology. To carry out all types of quality control of medicinal products: pharmacopoeial analysis, stage control in the production process, analysis of pharmaceutical forms of individual manufacturing and industrial production, express analysis in pharmacy conditions and biopharmaceutical analysis. To determine the stability of

pharmaceutical products of industrial production and pharmacy manufacturing. To perform quality certificates for a batch of medicinal product and the certificate of analysis taking into account the requirements of the current normative documents, the State Pharmacopoeia of Ukraine and the results of the quality control carried out, to perform module "Quality" of the registration dossier for a medicinal product. To develop specifications and methods of quality control in accordance with the requirements of the current State Pharmacopoeia of Ukraine. To determine the basic organoleptic, physical, chemical, chemico-physical and pharmaco-technological indicators of medicinal products, to base and choose the methods of their standardization, to carry out statistical processing of the results in accordance with the requirements of the current State Pharmacopoeia of Ukraine.