

MINISTRY OF HEALTH OF UKRAINE  
NATIONAL PIROGOV MEMORIAL MEDICAL UNIVERSITY,  
VINNYTSYA

**EDUCATIONAL – PROFESSIONAL PROGRAM**

**«PHARMACY, INDUSTRIAL PHARMACY»**

**Second (Master's) level**

**Specialty 226 Pharmacy, Industrial Pharmacy**

**Branch of knowledge 22 Health Care**

**Qualification: Master of Pharmacy, Industrial Pharmacy**

**APPROVED BY ACADEMIC COUNCIL**

**Head of Academic Council**

**\_\_[signature]\_/prof. V.M.Moroz**

**(record № 11 dated May 31, 2021)**

**Educational Program is implemented from 01.09.2020**

**Rector \_\_[signature]\_/ prof. V.M.Moroz**

**(order № 52 dated June 3, 2021)**

**V i n n y t s y a - 2 0 2 1**

**A G R E E M E N T   L E T T E R**

**of educational – professional program**

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**Rector**

**V.M. Moroz**

**Vice-Rector for Scientific and Pedagogical  
(Educational) Work**

**Y.Y. Guminsky**

**Dean of Pharmaceutical  
Faculty**

**V.P. Bobruk**

## **PREFACE**

elaborated by a project group with the following members:

1. Kryvovyaz Olena Viktorivna - doc.of pharm. sc-s, prof., Head of Department of Pharmacy of National Pirogov Memorial Medical University, Vinnytsya, Educational Program Guarantor.
2. Bobruk Volodymyr Petrovych - candidate of med.sc-s, as.prof., Dean of Pharmaceutical Faculty of National Pirogov Memorial Medical University, Vinnytsya.
3. Tomashevskya Julia Oleksandrivna - candidate of med.sc-s, as.prof. of Department of Pharmacy of National Pirogov Memorial Medical University, Vinnytsya.
4. Duchenko Marina Anatoliivna - candidate of pharm.sc-s, as.prof., Vice-Dean of Pharmaceutical Faculty, associate professor of Department of Pharmaceutical Chemistry of National Pirogov Memorial Medical University, Vinnytsya.
5. Davydenko Oleksandra Oleksandrivna - candidate of pharm.sc-s, as.prof. of Department of Pharmaceutical Chemistry of National Pirogov Memorial Medical University, Vinnytsya.

### **Reviews of external stakeholders:**

1. Polovko N.P. – Vice-Rector for Scientific and Academic Work of National Pharmaceutical University, doctor of pharmaceutical sciences, professor
2. Marchyshyn S.M. – Head of Department of Pharmacognosy with Medicinal Botany of Ternopil National Medical University, doctor of pharmaceutical sciences, professor
3. Polishuk I.A. – head of LLC “Specpharmacia”
4. Ponomariova S.M. –Director of Central Regional Trade Representation Vinnytsia LLC "YURIA-PHARM"

**1. Profile of Educational Program in specialty 226 «Pharmacy,  
Industrial Pharmacy»**

<b>1 – General information</b>	
<b>Full name of the higher education institution and structural unit</b>	«National Pirogov Memorial Medical University, Vinnytsya» MoH of Ukraine  Pharmaceutical Faculty
<b>Higher education level and title of qualification in the original language</b>	Другий (магістерський) рівень Магістр фармації, промислової фармації. Second (Master's) level Master of Pharmacy, Industrial Pharmacy
<b>Official name of the educational program</b>	« Pharmacy, Industrial Pharmacy»
<b>Type of diploma and educational program scope</b>	Master's diploma, unitary, program scope - 300 ECTS credits, term of study - 5 years (full-time form of study).
<b>Accreditation</b>	Accredited
<b>Cycle/Level</b>	FQ – EHEA – second cycle, QF-LLL – 7 level, NFQ of Ukraine – 7 level
<b>Preconditions</b>	Admission Conditions are determined by Rules of Admission to «National Pirogov Memorial Medical University, Vinnytsya» MoH of Ukraine
<b>Language(s) of Instruction</b>	Ukrainian, English
<b>Term of the educational program</b>	5,5 years
<b>Internet address of permanent placement of the educational-professional program description</b>	<a href="https://www.vnmu.edu.ua/загальна-інформація/основні-документи">https://www.vnmu.edu.ua/загальна-інформація/основні-документи</a>

**2 – Objective of the educational program**

Provide academic education for graduates in basic and applied sciences and professional training by acquiring general and professional competencies for professional activities in the relevant position, including organizational, technological, control-analytical, administrative-economic (managerial) functions: definition of needs in medicines and medical devices, organization of their supply, distribution, promotion, supply of medicines and other products of pharmacy range taking into account modern international trends, providing modern technology of drug production, reception, storage and release of medicines, quality control of medicines, ensuring safe and rational use of drugs, monitoring the effectiveness of pharmacotherapy and / or side effects, providing pharmaceutical care on the basis of pharmaceutical ethics and deontology, conducting information work.

<b>3 – Description of the educational program</b>	
<b>Subject area (branch of knowledge, specialty)</b>	Branch of knowledge – 22 «Health Care» Specialty – 226 «Pharmacy, Industrial Pharmacy».
<b>Orientation of the educational program</b>	The educational-professional program has educational-professional, research, applied and practical orientation. The program contains mandatory and optional components of general and professional training cycles, which provide mastery of knowledge and skills to perform the functions of Master of Pharmacy, Industrial Pharmacy in compliance with the principles of pharmaceutical deontology, continuous improvement of professional and scientific level.
<b>General focus of the educational program</b>	The educational program aims to train competitive in the labor market professionals for the pharmaceutical industry, who have critical thinking and an appropriate set of competencies needed to solve complex problems and problems to ensure the proper quality of medicines at all stages of their life cycle (from the creation and production to final implementation), which involves research ha / or innovation. Meets the requirements of employers in the field of production, wholesale and retail sales of medicines, as it forms an innovative style of thinking.
<b>Distinctive features of the program</b>	The program is based on a combination of theoretical knowledge, practical skills and scientific achievements that provide high quality training for masters of pharmacy, industrial pharmacy. Due to constant changes in modern pharmaceutical science and practice, the content of the program is periodically reviewed and partially updated, which allows to take into account current trends in the field of health care.
<b>4 – Capabilities of graduates for employment and further education</b>	
<b>Capability for employment</b>	After graduating from the educational program "Pharmacy, Industrial Pharmacy" specialty 226 Pharmacy, Industrial Pharmacy in the field of knowledge 22 Health care specialist can perform professional work under DK 003: 2010: 23157 laboratory assistant (pharmacy) (code KP - 3228); 24427 pharmacist-intern (code KP - 3228); 2224.1 junior researcher (pharmacy). After internship, the specialist is able to perform the professional work specified in DK 003: 2010 and can hold the appropriate primary position in section 2224 "professionals in the field of pharmacy" (2224.1 Researchers (pharmacy) and 2224.2 Pharmacists), as well as 23 "Teachers".
<b>Further education</b>	After graduating from the second (master's) level of higher education (educational-professional program "Pharmacy, Industrial Pharmacy" specialty 226 Pharmacy, Industrial Pharmacy in the field of knowledge 22 Health) the specialist may enter the educational program of postgraduate education in accordance with current regulations requirements depending on the field of activity, or on the educational and scientific program for obtaining the third level - the degree of Doctor of Philosophy.
<b>5 - Teaching and assessment</b>	
<b>Teaching and learning</b>	The training of applicants for higher education at the second (master's) level is based on student-centered learning, problem-oriented learning with a scientific component.

	Training includes lectures, practical and seminar classes, introductory training, propaedeutic, field and industrial practices.
<b>Assessment</b>	Assessment of academic achievement of higher education students is carried out on a mutually agreed 5-point (5 - "excellent", 4 - "good", 3 - "satisfactory", 2 - "unsatisfactory") and verbal ("passed", "not passed") systems, the scale of the educational institution (from 0 to 200 points), the national scale ECT B (A, B, C, O, E, EX, I). Types of control: current, intermediate, final. Forms of control: tests, differential tests, exams, certification of graduates.
<b>6 – Program competences</b>	
<b>Integral competence</b>	Ability to solve complex problems and critically comprehend and solve practical problems in professional pharmaceutical and / or research and innovation activities using the provisions, theories and methods of basic, chemical, technological, biomedical and socio-economic sciences; integrate knowledge and solve complex issues, formulate judgments on insufficient or limited information; clearly and unambiguously convey their own knowledge, conclusions and their validity to the professional and non-professional audience.
<b>General competences (GC)</b>	<p>GC 1. Ability to act socially responsible and civic conscious.</p> <p>GC 2. Ability to apply knowledge in practical situations.</p> <p>GC 3. The desire to preserve the environment.</p> <p>GC 4. Ability to abstract thinking, analysis and synthesis, to learn and be modernly trained.</p> <p>GC 5. Ability to show initiative and entrepreneurship.</p> <p>GC 6. Knowledge and understanding of the subject area and understanding of professional activity.</p> <p>GC 7. Ability to adapt and act in a new situation.</p> <p>GC 8. Ability to communicate in the state language both orally and in writing, the ability to communicate in a foreign language (mainly English) at a level that ensures effective professional activity.</p> <p>GC 9. Skills in the use of information and communication technologies.</p> <p>GC 10. Ability to choose communication strategy, ability to work in a team and with experts from other fields of knowledge / types of economic activity.</p> <p>GC 11. Ability to assess and ensure the quality of work performed.</p> <p>GC 12. Ability to conduct research at the appropriate level.</p> <p>GC 13. Ability to exercise their rights and responsibilities as a member of society, to realize the values of civil (free democratic) society and the need for its sustainable development, the rule of law, human and civil rights and freedoms in Ukraine.</p> <p>GC 14. Ability to preserve and multiply moral, cultural, scientific values and achievements of society based on understanding the history and patterns of development of the subject area, its place in the general system of knowledge about nature and society and in the development of society, technology and technology, use different types and forms of motor activity for the active rest and lead a healthy lifestyle.</p>
<b>Professional competences (PC)</b>	PC 1. Ability to conduct sanitary and educational work among the population in order to prevent common diseases, prevent dangerous infectious, viral and parasitic diseases, as well as to facilitate the timely detection and

maintaining adherence to the treatment of these diseases in accordance with their medical and biological characteristics and microbiological features.

PC 2. Ability to provide advice on prescription and over-the-counter drugs and other products of the pharmacy range; pharmaceutical care in the selection and sale of over-the-counter drugs by assessing the risk / benefit, compatibility, indications and contraindications based on data on the health of a particular patient, taking into account biopharmaceutical, pharmacokinetic, pharmacodynamic and physicochemical characteristics of the drug and other pharmaceutical products .

PC 3. Ability to provide home care to patients and victims in extreme situations and emergencies.

PC 4. Ability to ensure the rational use of prescription and over-the-counter drugs and other pharmaceutical products in accordance with physicochemical, pharmacological characteristics, biochemical, pathophysiological features of a particular disease and pharmacotherapeutic regimens for its treatment.

PC 5. Ability to monitor the effectiveness and safety of the population of drugs according to the data on their clinical and pharmaceutical characteristics, as well as taking into account subjective signs and objective clinical, laboratory and instrumental criteria for examination of the patient.

PC 6. Ability to identify drugs, xenobiotics, toxins and their metabolites in body fluids and tissues, to conduct chemical and toxicological studies to diagnose acute poisoning, drug and alcohol intoxication.

PC 7. Ability to ensure proper storage of medicines and other products of the pharmacy range in accordance with their physical and chemical properties and the rules of Good Storage Practice (GSP) in health care facilities.

PC 8. Ability to organize the activities of pharmacies to provide the population, health care facilities with medicines and other products of the pharmacy range and implement appropriate reporting and accounting systems (management, statistical, accounting and financial) in accordance with the requirements of the National Medical Policy, Appropriate Pharmacy practice (GPP) and to carry out commodity analysis, administrative record keeping taking into account organizational and legal norms of the pharmaceutical legislation.

PC 9. Ability to analyze and forecast the main economic indicators of pharmacies, to calculate basic taxes and fees, to form prices for medicines and medical devices in accordance with current legislation of Ukraine.

PC 10. Ability to develop, implement and apply management approaches in the professional activities of pharmacies, wholesalers, manufacturing companies and other pharmaceutical organizations, to argue the principles of HR-management and self-management, to demonstrate leadership skills.

PC 11. Ability to analyze socio-economic processes in pharmacy, forms, methods and functions of the pharmaceutical supply system and its components in world practice, indicators of need, efficiency and availability of pharmaceutical care in terms of health insurance and reimbursement of the cost of drugs.

PC 12. Ability to use in professional activities knowledge of regulations, legislation of Ukraine and recommendations of good pharmaceutical

	<p>practices.</p> <p>PC 13. Ability to demonstrate and apply in practice communication skills, fundamental principles pharmaceutical ethics and deontology, based on moral obligations and values, ethical standards of professional conduct and responsibility in accordance with the Code of Ethics for Pharmaceutical Workers of Ukraine and WHO guidelines.</p> <p>PC 14. Ability to organize and carry out the production activities of pharmacies for the manufacture of drugs in various dosage forms on prescriptions and orders of medical institutions, including technology justification and selection of auxiliary materials in accordance with the rules of Good Pharmacy Practice (GPP).</p> <p>PC 15. Ability to organize and participate in the production of medicines in pharmaceutical companies, including the selection and justification of the technological process, equipment in accordance with the requirements of Good Manufacturing Practice (SMP) with the appropriate development and design of the necessary documentation. Determine the stability of drugs.</p> <p>PC 16. Ability to organize and procure medicinal plant raw materials in accordance with the rules of Good Practice for Cultivation and Harvesting of Raw Materials of Plant Origin (OACP), as a guarantee of the quality of medicinal plant raw materials and medicinal products based on it. Ability to predict and calculate ways to solve the problem of conservation and protection of thickets of wild medicinal plants, in accordance with current legislation.</p> <p>PC 17. Ability to organize and carry out general and marketing management of assortment, commodity-innovative, price, sales and communication policies of subjects pharmaceutical market based on the results of marketing research and taking into account market processes in national and international markets, manage risks in the pharmaceutical supply system.</p> <p>PC 18. Ability to develop and implement a quality management system for pharmaceutical companies in accordance with the requirements of current Standards, perform quality audits and risk management for the quality of pharmaceutical products.</p> <p>PC 19. Ability to organize and control the quality of medicines in accordance with the requirements of the current State Pharmacopoeia of Ukraine and good practices in pharmacy, determine methods of sampling for control of medicines and standardize them in accordance with current requirements, prevent the spread of counterfeit medicines.</p> <p>PC 20. Ability to develop methods for quality control of medicines, including active pharmaceutical ingredients, medicinal plant raw materials and excipients using physical, chemical, physicochemical, biological, microbiological, pharmacotechnological and pharmacoorganoleptic control methods.</p>
<b>7 - Program learning outcomes</b>	
	<p>PLO 1. Conduct professional activities in social interaction based on humanistic and ethical principles; identify future professional activities as socially significant for human health.</p> <p>PLO 2. Apply knowledge of general and professional disciplines in professional activities.</p>

PLO 3. Adhere to the norms of sanitary and hygienic regime and safety requirements in carrying out professional activities.

PLO 4. Demonstrate the ability to independently search, analyze and synthesize information from various sources and use these results to solve typical and complex specialized tasks of professional activity.

PLO 5. And to position their professional activity and personal qualities in the pharmaceutical labor market; to formulate the purposes of own activity taking into account public and industrial interests.

PLO 6. Argue information for decision-making, be responsible for them in standard and non-standard professional situations; adhere to the principles of deontology and ethics in professional activities.

PLO 7. Perform professional activities using creative methods and approaches. PLO 8. Carry out professional communication in the state language, use the skills of oral communication in a foreign language, analyzing texts of professional orientation and translate foreign language information sources.

PLO 9. Carry out professional activities using information technology, "Information databases", navigation systems, Itetets resources, software and other information and communication technologies.

PLO 10. Adhere to the norms of communication in professional interaction with colleagues, management, consumers, work effectively in a team.

PLO 11. Use methods for assessing performance indicators; identify reserves to increase labor efficiency.

PLO 12. Analyze the information obtained as a result of scientific research, summarize, systematize and use it in professional activities.

PLO 13. Carry out sanitary-educational work in professional activity in case of outbreaks of infectious, viral and parasitic diseases.

PLO 14. To determine the advantages and disadvantages of drugs of different pharmacological groups, taking into account their chemical, physicochemical, biopharmaceutical, pharmacokinetic and pharmacodynamic features. Recommend to consumers over-the-counter medicines and other pharmacy products with advisory care and pharmaceutical care.

PLO 15. Provide home care to patients in emergencies and victims in extreme situations.

PLO 16. To determine the influence of factors influencing the processes of absorption, distribution, deposition, metabolism and excretion of the drug and due to the condition, features of the human body and physico-chemical properties of drugs.

PLO 17. Use data from clinical, laboratory and instrumental studies to monitor the effectiveness and safety of drugs.

PLO 18. Select biological objects of analysis, determine xenobiotics and their metabolites in biological environments and evaluate the results based on their distribution in the body.

PLO 19. To forecast and determine the impact of environmental factors on the quality of medicines and consumer characteristics of other products of the pharmacy range during their storage.

	<p>PLO 20. Carry out a set of organizational and managerial measures to provide the population and health care facilities with medicines and other products of the pharmacy range. Carry out all types of accounting in pharmacies, administrative records, processes of commodity analysis.</p> <p>PLO 21. Calculate the main economic indicators of pharmacies, as well as taxes and fees. To form all types of prices (wholesale, purchase and retail) for medicines and other products of the pharmacy range.</p> <p>PLO 22. Manage pharmaceutical organizations and determine its effectiveness using management functions. Make management decisions based on the formed leadership and communication skills of pharmaceutical personnel for strategic planning of enterprises.</p> <p>PLO 23. Take into account data on socio-economic processes in society for the pharmaceutical supply of the population, determine the effectiveness and availability of pharmaceutical care in terms of health insurance and reimbursement of the cost of drugs.</p> <p>PLO 24. To plan and implement professional activity on the basis of normative legal acts of Ukraine and recommendations of good pharmaceutical practices.</p> <p>PLO 25. To promote the preservation of health, including disease prevention, rational appointment and use of drugs. Perform your professional duties in good faith, comply with the law on the promotion and advertising of medicines. Have psychological communication skills to build trust and understanding with colleagues, doctors, patients, consumers.</p> <p>PLO 26. To choose rational technology, to make medicines in various medicinal forms according to prescriptions of doctors and orders of medical institutions, to issue them before release. Perform technological operations: weigh, measure, dose a variety of drugs by weight, volume, etc. Develop and draw up technological documentation for the manufacture of medicines in pharmacies.</p> <p>PLO 27. To substantiate the technology and organize the production of medicines at pharmaceutical enterprises and draw up technological documentation for the production of medicines at pharmaceutical enterprises.</p> <p>PLO 28. Organize and conduct rational procurement of medicinal plant raw materials. Develop and implement measures for the protection, reproduction and rational use of wild species medicinal plants.</p> <p>PLO 29. To ensure competitive positions and effective development of pharmaceutical organizations on the basis of research work on all elements of the marketing complex.</p> <p>PLO 30. Ensure quality control of medicines and document its results. Manage quality risks at all stages of the life cycle of medicines.</p>
<b>8 – Resource support for program implementation</b>	
<b>Staffing</b>	<p>Staffing of the educational and professional program "Pharmacy, Industrial Pharmacy" meets the Licensing Conditions for the educational activities of educational institutions in the field of higher education for the second (master's) level.</p> <p>Teaching disciplines under the educational-professional program "Pharmacy, Industrial Pharmacy" is provided by 20 departments, including 5 clinical and 15 theoretical. There are 464 teachers in the departments,</p>

	<p>301 of them (64.8%) have a scientific degree, including 42 doctors of sciences (9%), 29 professors (6.3%), and 259 candidates of sciences. %, associate professors - 181 (39%). All scientific and pedagogical workers involved in the implementation of the educational component of the program are full-time employees of the University "Vinnitsya National Medical University. M. I. Pirogov "have a confirmed level of scientific and professional activity (activity), most have practical experience.</p> <p>Research and teaching staff improve their skills in Ukraine and abroad.</p>
<p><b>Facilities</b></p>	<p>Availability of educational and lecture halls, equipped with computer workstations, multimedia, technical means of education; clinical base for practical training for higher education applicants or according current agreements for practical training in medical institutions; specific mannequins and models.</p> <p>The training base of the structural subdivisions of the medical faculty allows to organize and conduct classes in all disciplines at the appropriate scientific and methodological level. Multimedia and computer equipment are used for lectures and practical classes. Classrooms are equipped with the necessary devices and equipment, there are computer classes. To implement all the practical skills the university has created and sufficiently equipped interdepartmental training center.</p> <p>Applicants for the second (master's) level of higher education have the opportunity to conduct research in such departments of the university:</p> <ul style="list-style-type: none"> <li>• Clinical and diagnostic laboratory of the Research Institute for Rehabilitation of the Disabled (education-scientific-clinic complex of VNMU);</li> <li>• Research Laboratory of Functional Morphology and Developmental Genetics;</li> <li>• Educational-scientific clinical-diagnostic laboratory of PCR;</li> <li>• Research Laboratory of Experimental Neurophysiology;</li> <li>• Clinical and diagnostic gastroenterological laboratory;</li> <li>• Bacteriological laboratory;</li> <li>• Research laboratory of preclinical study of pharmacological substances;</li> <li>• Research clinical diagnostic laboratory;</li> <li>• Educational-scientific clinical-diagnostic (pathomorphological) laboratory;</li> <li>• Educational and research laboratory for studying allergenic environmental factors;</li> <li>• Experimental and biologic clinic (vivarium).</li> </ul> <p>All scientific laboratories have been accredited and in accordance with the decision of the Commission for Accreditation of Measuring Equipment of the Ministry of Health of Ukraine have received the appropriate certificates.</p>
<p><b>Information educational and methodical support</b></p>	<p>Information and educational and methodological support for the implementation of the program meets the licensing conditions of educational activities of educational institutions in the field of higher education for the second (master's) level, including:</p>

	<p>- Appropriate educational and methodological support (complexes) of academic disciplines, which contain methodological developments for seminars, practical classes, methodical instructions for independent work of higher education seekers, individual tasks of practical orientation; methodical materials for passing of practices, tasks for control of knowledge (examination tickets, test tasks, final, complex control works); modern information sources and computer equipment; own Web-pages of the departments responsible for training masters of medicine; internet connection; library with modern educational literature, scientific, reference and professional periodicals. The official website <a href="http://vnmdu.edu.ua">http://vnmdu.edu.ua</a> contains information about educational programs, educational, scientific and educational activities, structural units, admission rules, contacts, etc.</p> <p>- scientific library of VNMU, the fund of which contains 574 993 copies. The electronic information room has 30 computers and Internet access. The institutional repository of the university contains almost 4000 documents.</p> <p>- computer equipment and technical means of teaching (the computer park of the university has 1365 computers, 1560 educational display places, 38 computer classes, multimedia support of more than 270 lectures).</p>
<b>9 – Academic Mobility</b>	
<b>National credit mobility</b>	National credit mobility is carried out on the basis of current legislation and the Regulations on academic mobility of participants in the educational process of VNMU. It is allowed to recognize the competencies acquired by the applicant in other higher education institutions in one or more academic disciplines (credit ECTS credits), the obligatory acquisition of which is provided by the educational-professional program.
<b>International credit mobility</b>	International credit mobility is carried out on the basis of current legislation and the Regulations on academic mobility of participants in the educational process of VNMU, as well as on the basis of cooperation agreements with individual institutions for the implementation of joint research on topical issues of medicine for Ukraine, exchange of scientific and scientific-pedagogical staff, applicants and graduate students with more than 40 foreign universities and medical institutions (Austria, Belgium, Belarus, Great Britain, Armenia, Egypt, France, Italy, Canada, Latvia, the Netherlands, Germany, Morocco, Moldova, Poland, Romania, the USA, Turkey, the Czech Republic, Sweden, etc.).
<b>Training of foreign higher education applicants</b>	Admission of foreign applicants is conducted in accordance with the "Rules of admission to National Pirogov Memorial Medical University, Vinnytsya for foreigners and stateless persons ". Training takes place in accordance with the "Regulations on the organization of the educational process at VNMU».

## 2. List of components of the educational-professional program and their logical sequence

Код н/д	<b>2.1. List of EPP components</b> EPP components (subjects, practices)	Amount of credits	Form of final control
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
<b>Compulsory EPP components (CC)</b>			
<b>Cycle of Subjects of General Training</b>			
CC 1.	Foreign Language	3,0*	Dif.credit
CC 2.	Professional Ukrainian Language	3,0*	Dif.credit
CC 3.	Professional foreign language	2,0*	Dif.credit
CC 4.	Ukrainian as a Foreign Language	8,0**	Dif.credit
CC 5.	Latin language and Medical Terminology	3,0	Dif.credit
CC 6.	History of Ukraine and Ukrainian Culture	2,5	Dif.credit
CC 7.	Philosophy	3,0	Dif.credit
CC 8.	Human Anatomy and Physiology	5,0	Exam
CC 9.	Biologic Physics with Physical Methods of Analysis	4,5	Dif.credit
CC 10.	Information Technologies in Pharmacy	3,0	Dif.credit
CC 11.	Biology with Fundamentals of Genetics	4,0	Dif.credit
CC 12.	Microbiology with Fundamentals of Immunology	5,0	Exam
CC 13.	Physical Education	*	Credit
CC 14.	Biologic Chemistry	6,0	Exam
CC 15.	General and Inorganic Chemistry	6,0	Exam
CC 16.	Pathologic Physiology	4,0	Exam
CC 17.	Organic Chemistry	7,5	Exam
CC 18.	Analytical Chemistry	7,5	Exam
CC 19.	Pharmaceutical Botany	5,0	Exam
<b>Total:</b>		<b>74,0</b>	
<b>Subjects of professional training</b>			
CC 20.	Life Safety	1,5	Credit
CC 21.	Introduction to Pharmacy	3,0	Dif.credit
CC 22.	Emergency Medicine	1,5	Dif.credit
CC 23.	Ethics and Deontology in Pharmacy	1,5	Dif.credit
CC 24.	Pharmacognosy	8,5	Exam
CC 25.	Organization and Economics of Pharmacy	6,0	Exam
CC 26.	Pharmacology	8,5	Exam
CC 27.	Pharmaceutical Chemistry	13,0	Exam
CC 28.	Physical and Colloidal Chemistry	4,0	Exam
CC 29.	Drug Technology: Pharmaceutical Drug Technology	6,0	Exam
CC 30.	Drug Technology: Industrial Drug Technology	6,0	Exam
CC 31.	Pharmacoeconomics	3,0	Dif.credit
CC 32.	Pharmacotherapy and Pharmacokinetics	3,0	Dif.credit
CC 33.	Civil Defense	0,5	Credit
CC 34.	Clinical Pharmacy and Pharmaceutical Care	9,0	Exam
CC 35.	Pharmaceutical and Medical Commodity Science	4,0	Dif.credit
CC 36.	Pharmaceutical Management and Marketing	6,0	Exam
CC 37.	Biopharmacy	3,0	Dif.credit
CC 38.	Systems of Quality in Pharmacy	3,0	Dif.credit
CC 39.	Labour Protection and Labour Protection in Pharmacy	2,0	Credit

CC 40.	Pharmaceutical Biotechnology	1,5	Dif.credit
CC 41.	Resource Study of Medicinal Plants	2,5	Dif.credit
CC 42.	Drug Standardization	2,5	Dif.credit
CC 43.	Technology of Cosmetics	3,0	Dif.credit
CC 44.	Pharmaceutical Law and Legislation	2,5	Credit
<i>Total amount of compulsory components per cycle</i>		<b>105,0</b>	
<i>Total amount of compulsory components</i>		<b>179,0</b>	
<b>Practical Training</b>			
CC 45.	First Pre-Medical Aid with Introductory Medical Practice	2,5	Dif.credit
CC 46.	Educational Practice in Pharmacognosy	2,5	Dif.credit
CC 47.	Educational Practice in Drug Technology	2,5	Dif.credit
CC 48.	Propedeutics in Pharmaceutical Drug Technology	2,5	Dif.credit
CC 49.	Introductory Practice in Organization of Economics in Pharmacy	2,5	Dif.credit
CC 50.	Educative Practice in Pharmaceutical Botany	2,5	Dif.credit
CC 51.	Practical Training in Pharmaceutical Drug Technology	2,5	Dif.credit
<i>Total</i>		<b>20,0</b>	
<b>Pharmaceutical Practical Training with Specialization</b>			
CC 52.	Practical Training in Organization of Economics in Pharmacy	5,0	Dif.credit
CC 53.	Educative Practice in Clinical Pharmacy	5,0	Dif.credit
CC 54.	Practical Training in Industrial Drug Technology	5,0	Dif.credit
CC 55.	Practical Training in Pharmaceutical Chemistry	5,0	Dif.credit
CC 56.	Practical Training in Management and Marketing	5,0	Dif.credit
<i>Total</i>		<b>25,0</b>	
<b>OPP Elective Courses (EC)***</b>			
<i>Total</i>		<b>76,0</b>	
<b>TOTAL AMOUNT OF EDUCATIVE PROGRAM</b>		<b>300,0</b>	

\* for Ukrainian-speaking students

\*\* for foreign students

\*\*\* Appendix 1

## 2. Structural Logic Scheme of the Educational Program

Code	Educative Program Components (subjects, course projects (works), practices, qualification work)
I year	
CC 1.	Foreign Language
CC 3.	Professional foreign language
CC 4.	Ukrainian as a Foreign Language
CC 5.	Latin language and Medical Terminology
CC 6.	History of Ukraine and Ukrainian Culture
CC 7.	Philosophy
CC 8.	Human Anatomy and Physiology
CC 9.	Biologic Physics with Physical Methods of Analysis
CC 11.	Biology with Fundamentals of Genetics
CC 13.	Physical Education
CC 15.	General and Inorganic Chemistry
CC 20.	Life Safety
CC 21.	Introduction to Pharmacy
CC 49.	Introductory Practice in Organization of Economics in Pharmacy
	Elective Courses
	2 year
CC 2.	Professional Ukrainian Language
CC 4.	Ukrainian as a Foreign Language
CC 10.	Information Technologies in Pharmacy
CC 12.	Microbiology with Fundamentals of Immunology
CC 13.	Physical Education
CC 14.	Biologic Chemistry
CC 17.	Organic Chemistry
CC 18.	Analytical Chemistry
CC 19.	Pharmaceutical Botany
CC 28.	Physical and Colloidal Chemistry
CC 45.	First Pre-Medical Aid with Introductory Medical Practice
CC 50.	Educative Practice in Pharmaceutical Botany
	Elective Courses
	3 year
CC 4.	Ukrainian as a Foreign Language
CC 12.	Microbiology with Fundamentals of Immunology
CC 16.	Pathologic Physiology
CC 22.	Emergency Medicine
CC 23.	Ethics and Deontology in Pharmacy
CC 24.	Pharmacognosy
CC 26.	Pharmacology
CC 27.	Pharmaceutical Chemistry
CC 28.	Physical and Colloidal Chemistry
CC 29.	Drug Technology: Pharmaceutical Drug Technology
CC 33.	Civil Defense
CC 44.	Pharmaceutical Law and Legislation
CC 46.	Educational Practice in Pharmacognosy
CC 48.	Propedeutics in Pharmaceutical Drug Technology
	Elective courses
	4 year

CC 24.	Pharmacognosy
CC 25.	Organization and Economics of Pharmacy
CC 27.	Pharmaceutical Chemistry
CC 30.	Drug Technology: Industrial Drug Technology
CC 31.	Pharmacoeconomics
CC 32.	Pharmacotherapy and Pharmacokinetics
CC 34.	Clinical Pharmacy and Pharmaceutical Care
CC 35.	Pharmaceutical and Medical Commodity Science
CC 36.	Pharmaceutical Management and Marketing
CC 39.	Labour Protection and Labour Protection in Pharmacy
CC 47.	Educational Practice in Drug Technology
CC 51.	Practical Training in Pharmaceutical Drug Technology
	Elective Courses
	5 year
CC 27.	Pharmaceutical Chemistry
CC 34.	Clinical Pharmacy and Pharmaceutical Care
CC 36.	Pharmaceutical Management and Marketing
CC 37.	Biopharmacy
CC 38.	Systems of Quality in Pharmacy
CC 40.	Pharmaceutical Biotechnology
CC 41.	Resource Study of Medicinal Plants
CC 42.	Drug Standardization
CC 43.	Technology of Cosmetics
CC 53.	Educative Practice in Clinical Pharmacy
CC 54.	Practical Training in Industrial Drug Technology
CC 55.	Practical Training in Pharmaceutical Chemistry
CC 56.	Practical Training in Management and Marketing
	* for Ukrainian-speaking students ** for foreign students

### **3. Forms of Attestation of Higher Education Applicants**

Certification of graduates of higher education "Master" of the educational-professional program "Pharmacy, Industrial Pharmacy" in the field of knowledge "Health" is conducted in the form of a single state qualifying exam (EDKI), which measures quantitative indicators of their theoretical training and determines the level of professions. yui com 11 etenti I ost.

EDKI consists of test components (integrated test exam "Step 1" and exam in English for professional purposes, licensed integrated test exam "Step 2"), as well as an objective structured practical exam (OSPI), conducted in accordance with the "Regulations on the organization of the educational process at Vinnytsia National Medical University. M. 1. Pirogov "and ends with the issuance of a standard document on the award of a master's degree with the qualification" Master of Pharmacy, Industrial Pharmacy".

Graduates of the final course of specialty 226 "Pharmacy, Industrial Pharmacy" are OSPI in the following disciplines: organization and management in pharmacy, drug technology, pharmaceutical chemistry, pharmacognosy, clinical pharmacy.

Certification is carried out openly and publicly.

**Appendix 2**  
**List of Elective Courses of Educational Professional Program**

<b>Code of Elective Course</b>	<b>Components of Educative Program</b>
EC 1.	Centerical questions of modern pharmacy
EC 2.	Academic Integrity
EC 3.	Analysis of economic activity of pharmaceutical enterprises
EC 4.	English in Pharmacy
EC 5.	Antidotes in modern medicine and pharmacy: mechanisms of action, use, consequences of therapy
EC 6.	Antropogenetics
EC 7.	Aromology in cosmetology and aromatherapy
EC 8.	Aromatherapy in Medical Practice
EC 9.	Aspects of health technology assessment
EC 10.	Bioactivity of inorganic compounds
EC 11.	Biological bases of active longevity
EC 12.	Biopharmaceutical aspects of cosmetology and aesthetic medicine
EC 13.	Biochemistry of homeostasis
EC 14.	Biochemistry of Inflammation
EC 15.	Biochemistry of nutrition
EC 16	Bromatology
EC 17	Drug Interaction at the Stages of Pharmacokinetics
EC 18	Study and Analysis of International Market of Phycenterreparations and Medicinal Plant Raw Materials (MPRM)
EC 19	Cultivation of the medicinal plants
EC 20	Higher Mathematics and Statistics
EC 21	Own business. PHARMACY
EC 22	Genetics of human behavior
EC 23	Hygiene in Pharmacy and Ecology
EC 24	Homeopathic medicines: pharmaceutical and technological aspects
EC 25	State regulation and control in pharmacy
EC 26	Excipients in Pharmaceutical and Cosmetic Technology
EC 27	Economics and Financing in Public Healthcare
EC 28	Ecotoxicology
EC 29	Esthetics and Theory of Art
EC 30	Ethics and Deontology in Pharmacy
EC 31	Effective and safe methods of chemical research
EC 32	General Cosmetology
EC 33	Medical Cosmetics
EC 34	Identification of Organic Compounds
EC 35	Immunobiologic Preparations
EC 36	History of the World's culture
EC 37	Clinical Biochemistry
EC 38	Clinical Pharmacology in Cardiology
EC 39	Clinical Trials
EC 40	Cell biology
EC 41	Computer Modeling in Pharmacy
EC 42	Communication Skills in Professional Pharmaceutical Activity
EC 43	Quality Control of Medicines

EC 44	Quality Control of Food and Food Additives
EC 45	Cosmetic Chemistry
EC 46	Medicinal Plants Cultivation
EC 47	Drug Toxicology
EC 48	Medicinal Plants of World Flora
EC 49	Medicinal plants in pharmacy
EC 50	Logics. Formal Logics
EC 51	Marketing in Medicine and Pharmacy
EC 52	Medicine and Art
EC 53	Methodology and Technology of Student's Research
EC 54	Methodology of scientific research in pharmacy
EC 55	Microbiologic Bases of Antibacterial Therapy
EC 56	Good Practices in Pharmacy
EC 57	Areas of professional development of a pharmacist
EC 58	Nutritional bases of correction of metabolic disorders
EC 59	Nutritiology
EC 60	Nutritiology and bromatology
EC 61	Fundamentals of agrobiolgy and prevention of seasonal diseases
EC 62	Fundamentals of bioethics and biosafety
EC 63	Fundamentals of genomics
EC 64	Fundamentals of Evolutionary Biology
EC 65	Fundamentals of Economic Theories
EC 66	Fundamentals of legislative regulation of the pharmaceutical industry
EC 67	Principles of healthy lifestyle
EC 68	Fundamentals of Metrology in Pharmacy
EC 69	Fundamentals of research in pharmacy
EC 70	Bases of Organic Production of Medicinal Plant Raw Materials
EC 71	Perfumes and cosmetics
EC 72	Personalized pharmacy and cosmetology
EC 73	Practical skills of the pharmacy representative
EC 74	Side Effects of Drugs
EC 75	Politology
EC 76	Applied Mycology
EC 77	Applied genetics
EC 78	Applied Statistics in Pharmacy
EC 79	Psychohygiene and current problems of university hygiene
EC 80	Drug resistance: mechanisms, prevention, ways to overcome
EC 81	Recreational (off-label) use of medicines, substances of plant origin and synthetic chemicals
EC 82	Drug Development
EC 83	Social Pharmacy
EC 84	Sociology and medical sociology
EC 85	Statistics in Public Healthcare
EC 86	Health insurance relations
EC 87	Modern Analytical Laboratory Practice
EC 88	Modern methods of research of biological systems
EC 89	Modern problems of Molecular Biology
EC 90	Modern programs for providing the population with medicines
EC 91	Theoretical Bases of Synthesis
EC 92	Theoretical foundations of drug forms technology
EC 93	Techniques of communication work of the head of the pharmaceutical enterprise
EC 94	Packaging technology of medicine in the pharmaceutical industry

EC 95	Toxicologic and Forensic Chemistry
EC 96	Project management in the field of medicine and pharmacy
EC 97	Pharmacological safety and pharmaceutical care of the drugs
EC 98	Pharmaceutical and technological aspects of biologically active additives
EC 99	Pharmaceutical and technological aspects of drug development and registration
EC 100	Pharmaceutical information: sources and their reliability
EC 101	Pharmaceutical logistics: the way of the drug from producer to consumer
EC102	Pharmaceutical terminology and basics of pharmaceutical calculations
EC 103	Pharmaceutical Analysis of Medicines
EC 104	Pharmaceutical Aspects of Nutrition
EC 105	Pharmaceutical aspects of drug addiction and psychoactive substance abuse
EC 106	Pharmaceutical Aspects of Phytotherapy
EC 107	Physico-chemical analysis in the creation of drugs
EC 108	Philosophy of love and mercy
EC 109	Phytotherapy in folk medicine
EC 110	Nutritional and Phytotherapeutic support in the prenatal period
EC 111	Chemo-toxicological analysis
EC 112	Medicinal Plants and fungi that are cultivated