MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
State Higher Educational Institution "I. Horbachevsky Ternopil State Medical University of the Ministry of Health of Ukraine"

EDUCATIONAL PROGRAM

"PHARMACY, MANUFACTURING PHARMACY"

The second level of higher education
specialty 226 Pharmacy, manufacturing pharmacy
branch of knowledge 22 Health care
qualification: Master of pharmacy, manufacturing pharmacy

Approved by the Academic Council
Head of the Academic Council
_____ /prof. M. Korda
(Minutes № ___ , «___» _____ 2018)
Educational program is provided from 01.09.2018.
Rector _____ /prof. M. Korda
(Order № ___ , «___» _____ 2018)

Ternopil 2018

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Rector	M. Korda
Vice-rector for Scientific and Pedagogical Affairs	A. Shulhai
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PREFACE

Developed by the project group

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1. Profile of the educational program in specialty 226 "Pharmacy, manufacturing pharmacy" (specialization "Pharmacy")

1 – General information	
Full name of institution of higher education and structural subdivision	State Higher Educational Institution "I. Horbachevsky Ternopil State Medical University of the Ministry of Health of Ukraine"; Pharmaceutical Faculty
Full name of the qualification in the original language	The second level of higher education Master of pharmacy, manufacturing pharmacy
The official name of the educational program	Pharmacy, manufacturing pharmacy
Type of diploma and the volume of the educational program	Master's degree, unitary, 300 ECTS credits, term of training 5 years The scope of the educational program of the Master's degree: • On the basis of full secondary education - 300 ECTS credits • Based on a diploma of Junior Specialist, Junior Bachelor, Bachelor's degree - 240 ECTS credits • A minimum of 75% of the educational program should be directed towards general and special (professional) competencies in the specialty defined by the relevant Higher Education Standard
Availability of accreditation	– Ministry of Education and Science of Ukraine – National Agency for Quality Assurance in Higher Education of Ukraine – Ukraine – Non-accredited
Cycle / Level	FQ-EHEA - second cycle, EQF-LLL - 7 level, NRC of Ukraine - 7 level
Prerequisites	Availability of the High (Secondary) School Certificate (on the basis of results of external independent testing), as well as, on the basis of a diploma of Junior Specialist, Junior Bachelor's degree in pharmacy or medicine, Specialist, Master's degree. The conditions of the admission procedure are determined by the Rules of admission to the State Higher Educational Institution "I. Horbachevsky Ternopil State Medical University of the Ministry of Health of Ukraine"
Language (s) of	Ukrainian, English

teaching	
Validity of the educational program	01 September 2018 – 30 June 2023
Internet address of the permanent description of the educational program	http://www.tdmu.edu.ua/wp-content/uploads/2016/10
2 – The purpose of the educational program	
The academic education of graduates in fundamental and applied sciences and professional training is provided by acquiring general and special competencies for the professional activity in the corresponding position, including the implementation of pharmaceutical assistance, guaranteeing the safe and rational use of medicines, monitoring the effectiveness of pharmacotherapy and / or side effects, readiness to bear (or divide) the responsibility for the results of the pharmacotherapy, the stages of the manufacturing of drugs, their storage, quality control, delivery, distribution, promotion, management, providing medicines and other pharmaceutical goods in accordance with the current international trends, provision of pharmaceutical care on the basis of pharmaceutical ethics and deontology.	
3 - Characteristics of the educational program	
Subject area (branch of knowledge, specialty)	Branch of knowledge 22 Health care, Specialty 226 Pharmacy, manufacturing pharmacy **The objects of study are:** medicines at all stages of the life cycle, pharmaceutical aid. **Learning goals:** preparation of competitive specialists for the needs of the pharmaceutical industry at the labor market, who have critical thinking and the appropriate set of competencies which are necessary to ensure the proper quality of medicines at all stages of their life cycle (from creation and production to final realization). **Theoretical content of the subject area:** includes consulting, communicative, organizational, technological, control and analytical, administrative and management, research functions, determination of safety, efficiency and economy of pharmacotherapy, requirements for medicines and other pharmacy products, organization of their supply; provision of modern technology for the development and manufacturing of medicines by prescriptions and requirements of health facilities; acceptance, storage and sale of medicines, the quality control of medicines; the implementation of pharmaceutical care; conducting

	advertising and informational work, adherence to the principles of pharmaceutical ethics and deontology, and continuous improvement of professional level. **Methods, methodology, techniques:** organoleptic, physical, chemical, physico-chemical, biopharmaceutical, pharmaco-technological, microbiological, biochemical and pharmacological, clinical, economic-calculation, pharmacoeconomic; marketing research, modeling, forecasting, etc. **Tools and equipment:** modern and widely used in practice and safe from the point of view of occupational safety tools and equipment for basic and applied research are used.
Orientation of the educational program	Educational-professional, applied. The structure of the program involves gaining knowledge about the sources of obtaining the substances of medicinal matters, their physical and chemical properties. Abilities based on primary information on the specifics of the chemical structure of substances necessary to use methods of analysis for quality assurance of compounds which are economically valid, express etc. The ability based on theoretical knowledge in relevant disciplines to produce a variety of extemporaneous formulations, including using plant material. The ability to analyze and generalize information in relation to proper promotion, logistics, distribution and storage of drugs. The ability to monitor the effectiveness of pharmacotherapy and side effects of certain groups of drugs, the willingness to share responsibility for the results of pharmacotherapy. The ability to standardize medicines using the latest advances in pharmaceutical science on modern equipment in pharmacy and industrial production. The ability to provide pharmaceutical care based on the principles of pharmaceutical ethics and deontology. The ability to form innovative strategies aimed at improving the relevant components of the pharmaceutical industry.
The main focus of the educational program and specialization	The educational program is aimed at training highly qualified specialists in the pharmaceutical industry, who possess modern knowledge and necessary practical skills. It meets the requirements of employers in the field of manufacturing, wholesale and retail sales of

	medicines, as it forms an innovative thinking style based on international documents which regulate all components of drug sales and related protocols.
Features of the educational program	The program is based on modern scientific advances in pharmacy and evidence-based medicine. It provides the acquisition of a high level of knowledge and practical skills in obtaining medicinal substances, their purification, methods of manufacturing medicinal products and their control. The program allows you to get a thorough knowledge of drug use in medical practice, as well as the primary organizational (managerial) experience. It is focused on further development, within which both professional and scientific components (theoretical and applied) are possible. The program provides the possibility of internship and practice in pharmaceutical educational establishments and institutions abroad. It is focused on the use of special information technologies (virtual screening, use of expert systems and databases) in order to optimize and increase the efficiency of scientific research in the field of pharmacy. The program forms specialists with a new style of thinking, able to generate the innovation proposals and to do systematic research in appropriate areas.
4 – Graduates aptitude for employment and further study	
Aptitude for employment	Upon completion of the training programme on "Pharmacy, industrial pharmacy", specialization «Pharmacy", specialty 226 Pharmacy a specialist is supposed to apply for post-graduate programme which is implemented as required by legal regulations, depending on the sphere of activity. In addition, the specialist may practice his (her) profession according to **State Classification (SC / ДК)** 003:2010: 23157 laboratory assistant (Pharmacy) (**Occupational Classification (OC / ПК)** code – 3228); 24427 pharmacist-intern (**OC** code – 3228). After internship, a specialist is able of practicing profession, specified in **SC** 003:2010, and is eligible to hold a corresponding primary post: 2224.2 pharmacist; 2224.2 pharmacist-analyst; 2224.2 pharmacist-toxicologist; 2224.2 pharmacist-homeopath.

Further studies	Upon completion of the training programme on "Pharmacy, industrial pharmacy", specialization "Pharmacy", specialty 226 Pharmacy a specialist may apply for the training programme to obtain PhD degree, as required by the legislation.
5 – Teaching and assessment	
Teaching and assessment	Student-centred approach, problem-based approach with scientific emphasis, lectures, seminars and practical classes, practical training, individual and autonomous learning, and teachers' counselling.
Assessment	Student's academic achievements are assessed on the coherent 1 to 12 scale (10-12 – "excellent", 7-9 – "good", 4-6 – "satisfactory", 1-3 – "unsatisfactory"), verbal system ("passed", "failed"), on the educational institution 0 to 200 scale, national ECTS (A, B, C, D, E, FX, F) scale. Control: current, interim, final, and self-testing. Forms of control: final tests, differentiated tests, oral and written exams, State qualification exam including preparation and defence of a Master's thesis; current and interim oral and written questioning, testing with the use of computer technologies; assessment of individual works (papers, presentations, etc.); defence of the practical training findings.
6 – Programme competence	
Integral competence	Proficiency in meeting typical and complicated specialized challenges, and critical approach to the practical problems in pharmacy and/or research-innovation sphere with the use of concepts, theories, and methods of fundamental, chemical, technological, biomedical, and socio-economic sciences; ability to integrate knowledge and to deal with complicated issues, to make judgements in conditions of lack or scanty information; ability to convey knowledge, conclusions and grounds to professional and non-professional audience comprehensibly and clearly.
General competencies (GC)	GC1. Ability to show high level of social responsibility and public concern. GC2. Ability to use knowledge in practical situations. GC3. Urge towards maintaining safe environment. GC4. Ability to abstract thinking, analysis and synthesis, as well as to study and to be trained in tune with the times.

	GC5. Ability to take initiative and to show a spirit of enterprise. GC6. Awareness of the subject sphere and professional activity. GC7. Adaptability and capacity to act in a new situation. GC8. Ability to communicate in oral and written Ukrainian, as well as in a foreign language (mostly English) at the level, providing efficient professional activity. GC.9 Skills in using information and communication technologies. GC10. Ability to choose communication strategy; capacity to work in teams and to co-operate with the experts in the other branches of knowledge/economic activity. GC11. Ability to assess and provide high-quality performance. GC12. Ability to undertake studies at the appropriate level. GC13. Ability to exercise one's civil rights and obligations, to accept the values of free, democratic society and to understand the need for its sustainable development, supremacy of law, as well as of human rights and freedoms in Ukraine. GC14. Ability to preserve and increase moral, cultural, scientific values and achievements of the society, based on the awareness of history and developmental pattern of the subject sphere and its role in the general system of knowledge of nature, society, technique and technologies; capacity to exercise different forms and types of motor activity for providing active leisure and healthy lifestyle.
Professional competencies (PC)	PC1. Ability to hold health education for prophylaxis and prevention of major infectious, viral, and parasitic diseases, as well as for their timely detection and maintaining responsiveness to treatment according to their medico-biological characteristics and microbiological specifics. PC2. Ability to consult as to prescription and over-the-counter drugs and other pharmacy items; to provide pharmaceutical supervision in choosing an over-the-counter drug by evaluating risk/benefit ratio,

	compatibility, indications and contraindications on the basis of a patient's data, biopharmaceutical, pharmacokinetic, pharmacodynamic, and physicochemical specifics of a drug or a pharmacy item taken into account. PC3. Ability to provide pre-medical care for the patients and victims of extreme situations and in urgent cases. PC4. Ability to provide adequate use of prescription and over-the-counter drugs, as well of the other pharmacy items according to physicochemical and pharmacological characteristics and taking account of biochemical and pathophysiological specifics of a particular disease and pharmacotherapeutic treatment regimens. PC5. Ability to monitor efficacy and safety of the medicines use by the population according to their clinico-pharmaceutical characteristics, subjective attributes, as well as objective clinical, laboratory, and instrumental examination criteria taken into account. PC6. Ability to determine medicinal agents, xenobiotics, toxins, and their metabolites in biological fluids and tissues; to conduct chemical and toxicological studies for the purpose of diagnosing acute poisoning, as well as drug and alcohol intoxication. PC7. Ability to provide proper storage of medicines and other pharmacy items according to their physicochemical properties and GSP regulations at the health care facilities. PC8. Ability to organize pharmacy-based supply of population and health care units with medicines and other pharmacy items; to introduce proper reporting and accounting systems (managerial, statistical, accounting, and financial) according to the requirements of the National Doctor's Policy and General Pharmacy Practice (GPP); to carry out merchandising examination and administrative paperwork, acting regulations of the pharmacy legislation taken into account. PC9. Ability to analyze and to foresee major pharmacy economic performance; to calculate taxes and dues; to provide pricing in pharmacy according to current

	legislation. PC10. Ability to develop, introduce, and apply managerial approach in pharmacy, wholesale/ mediatory and production units and other pharmacy organizations; to argue the principles of HR-management and self-management; to show leadership. PC11. Ability to analyze socio-economic processes in pharmacy; to review forms, methods, and functions of the pharmacy supply system and its components in the world practice; to analyze demand, efficacy, and availability indices of pharmacy support under medical insurance and reimbursement of medicines. PC12. Ability to involve the knowledge of normative legal acts, Ukrainian legislation, and recommendations of good pharmacy practices. PC13. Ability to show and use in practice communicative skills, major principles of pharmacy ethics and deontology, based on the moral obligations and values, ethical standards of professional conduct and responsibility according to the Ethic Code of Pharmacists of Ukraine and WHO management guidelines. PC14. Ability to organize and conduct pharmaceutical production of medicines in various forms as prescribed and ordered by the treatment facilities, including technology ground and choice of support materials according to GPP regulations. PC15. Ability to organize and conduct pharmaceutical production of medicines, including choice and grounding of technological process and equipment according to GMP requirements, necessary documents provided; to determine stability of medicines. PC16. Ability to organize and carry out procurement of medicinal plants according to the GACP rules, providing guarantee for the quality of medicinal plants and medicines derived; ability to foresee and estimate the ways of wild plants tangle preservation and protection on the basis of existing legislation. PC17. Ability to organize and carry out general and marketing management of product portfolio, commodity/innovation, pricing, distribution, and communication policy, basing on the results of market research, national and international market processes

	taken into account; to manage risks in the system of pharmacy supply. PC18. Ability to develop and introduce the quality control system at the pharmacy enterprises according to the requirements of current Standards; to carry out quality audit and risk management in order to provide high quality of pharmacy products. PC19. Ability to organize and carry out medicines quality control in line with the requirements of current State Pharmacopoeia of Ukraine and good practice in pharmacy; to determine the ways of medicines sampling and to standardize them according to existing requirements; to prevent proliferation of medicinal counterfeit. PC 20. Ability to develop procedures of medicines quality control, including active pharmaceutical ingredients, medicinal plants, and adjuvants, using chemical, physicochemical, biological, microbiological, pharmacotechnological, pharmacological, and organoleptic control methods.

7 – Program learning outcomes	
	PLO 1. To conduct professional activities in social interaction, based on humanistic and ethical principles; to identify future professional activities as socially important for human health. PLO 2. To apply general and professional disciplines knowledge in professional activities. PLO 3. To follow norms of the sanitary-hygienic regime and safety requirements in professional activity implementation. PLO 4. To demonstrate the ability to independent search, analyze and synthesize information from different sources and use these results to solve typical and complex specialized professional tasks. PLO 5. To position professional activity and personal qualities in the pharmaceutical labor market; to formulate goals of own activity taking into account social and industrial interests. PLO 6. To argue information for decision-making, to be responsible for them in standard and non-standard professional situations; to follow the principles of

	deontology and ethics in professional activities. PLO 7. To carry out professional activities using creative methods and approaches. PLO 8. To provide professional communication in state language, to use oral communication skills in a foreign language, to analyze professional texts and to translate foreign-language information sources. PLO 9. To carry out professional activity using information technologies, information databases, navigation systems, Internet resources, software and other information and communication technologies. PLO 10. To follow norms of communication in professional interaction with colleagues, management, consumers, to work effectively in a team. PLO 11. To use assessment methods for evaluating performance indicators; to identify reserves for improving labor productivity. PLO 12. To analyze information gained through scientific research, to generalize, systematize and use it in professional activity. PLO 13. To conduct sanitary-educational work in the professional activity in the case of infectious outbreaks, viral and parasitic diseases. PLO 14. To determine the advantages and disadvantages of medicinal products of various pharmacological groups taking into account their chemical, physio-chemical, biopharmaceutical, pharmacokinetic and pharmacodynamic characteristics. To recommend consumers non-prescription drugs and other pharmacy products with consulting advisory help and pharmaceutical care. PLO 15. To give premedical assistance to patients at emergency conditions and to victims in extreme situations. PLO 16. To determine the influence of factors affecting the processes of absorption, distribution, deposit, metabolism and withdrawal of the drug and conditioned by the state, the peculiarities of the human body and the physio-chemical properties of the drugs. PLO 17. To use data of clinical, laboratory and instrumental studies for monitoring the effectiveness and safety of drugs usage. PLO 18. To select biological objects of analysis, to

	carry out the determination of xenobiotics and their metabolites in biological environments and to evaluate the obtained results taking into account its distribution in the body. PLO 19. To prognosticate and determine the influence of environmental factors on the quality of medicinal products and consumer characteristics of other goods of the pharmacy assortment during their storage. PLO 20. To perform a complex of organizational and management measures pf providing population and health care institution by medicines and other products of the pharmacy assortment. To carry out all kinds of accounting in pharmacy establishments, administrative paperwork, processes of commodity analysis. PLO 21. To calculate main economic indicators of pharmacy establishments, as well as taxes and fees. To form all types of prices (wholesale, purchasing and retail) for medicines and other products of the pharmacy assortment. PLO 22. To manage pharmaceutical companies and determine its effectiveness using management functions. To make management decisions based on the existing leadership and pharmaceutical staff communication abilities on strategic planning of enterprises activity. PLO 23. To take into account data of socioeconomic processes in community for population pharmaceutical provision, to determine the effectiveness and availability of pharmaceutical assistance in the context of health insurance and reimbursement of medicines cost. PLO 24. To plan and implement professional activities on the basis of Ukraine normative legal acts and recommendations of appropriate pharmaceutical practices. PLO 25. To promote health care, including disease prevention, rational prescribing and drugs usage. Conscientiously carry out own professional duties; to follow legislation norms for promotion and medicinal products advertising. To have psychological skills of communication for achievement trust and understanding with colleagues, doctors, patients, and consumers.

	PLO 26. To choose a rational technology, to make medicines in different forms on the basis of doctors prescriptions and medical institutions orders, to make them for supplement. To perform technological operations: weigh, measure, dosage various medicines by weight, volume, etc. Develop and issue technological documentation on drugs manufacture in pharmacies. PLO 27. To substantiate technology and organize production of medicinal products at pharmaceutical companies and to make up technological documentation for the manufacture of medicines at pharmaceutical companies. PLO 28. To organize and conduct rational provision of medicinal plant material. To develop and implement measures for protection, reproduction and rational use of wild species of medicinal plants. PLO 29. To provide competitive positions and effective development of pharmaceutical companies on the basis of conducted research work according to all elements of marketing complex. PLO 30. To ensure the quality control of medicines and document its results. To carry out risk management at all stages of drugs life cycle. PLO 31. To carry out all types of medicines quality control; to make certificates of medicinal product series quality and certificate of analysis taking into account the requirements of current normative documents, State Pharmacopoeia of Ukraine and the results of carried out quality control. To develop specifications and methods of quality control in accordance with the requirements of the current State Pharmacopoeia of Ukraine. PLO 32. To determine main organoleptic, physical, chemical, physico-chemical and pharmaco-technological indicators of medicinal products, substantiate and choose methods of their standardization, perform statistical processing of results in accordance with requirements of current State Pharmacopoeia of Ukraine.
8 – Resourcing the implementation of program	
Staff	Educational program is provided by 20 departments consisting of 53 persons, including 41 Ph.D., among

	them 35 associate professors, 12 doctors of sciences, professors. All scientific and pedagogical workers are involved into realization of educational component of educational program, they are full-time employees of SHEE «I. Ya. Horbachevsky Ternopil State Medical University Ministry of Health of Ukraine», have a confirmed level of scientific and professional activity, most of them have practical work experience.
Material and technical support	Presence of educational and lecture auditories, equipped with computer workstations, multimedia equipment, technical means of training; bases for practice of higher education applicants or existing agreements for practice in medical institutions; availability of necessary reagents, equipment, machinery. Learning Pharmacy, as part of the University's Simulation Center, functions for proper acquisition of practical skills at Faculty's basis.
Information, teaching and methodological support	There is a proper educational and methodological support (facilities) for academic subjects. It contains resource materials for seminars, practical classes, laboratory practical work; resource materials for student's independent studies; individual tasks with the focus on practice; methodological materials for thesis writing and student practices; tasks for assessment (examination papers, test tasks, modular tasks, complex exams, and tests); modern information sources and computer equipment; library with contemporary educational literature, academic, scientific, reference and professional periodicals. The official university's website http://www.tdmu.edu.ua contains information about educational programs; educational, scientific and disciplinary activities; structural subdivision; rules of admission; contacts. TSMU library collection contains more than 389669 items. All library resources can be found on the university's website.
9 – Academic mobility	
National Credit	Recognition of educational results in other educational

Mobility	institutions within the framework of academic mobility in accordance with agreements concluded by the university
International Credit Mobility	Conducting of international mobility through Erasmus + and Erasmus Mundus Medea
Teaching higher education foreign applicants	International students teaching is carried out in accordance with the requirements of the current legislation

2. The list of educational program components and their logical consistency

2.1. The list of EP components

Discipline Code	Components of educational programs (subjects, course projects (works), practice, qualifying work)	Number of credits	Type of final assessment
1	2	3	4
Mandatory components of EP			
The cycle of general training subjects			
MC 1.	Business Ukrainian Language	3,00	Graded credit
MC 2.	Philosophy	3,00	Graded credit
MC 3.	Business Foreign Language	3,00	Graded credit
MC 4.	Latin Language	3,00	Exam
MC 5.	Biological Chemistry	6,00	Exam
MC 6.	Pathophysiology	4,00	Graded credit
MC 7.	Pathophysiology	5,00	Exam
MC 8.	Pharmaceutical botany	5,00	Exam
MC 9.	Organic Chemistry	8,00	Exam
MC 10.	Analytical chemistry	8,00	Exam
MC 11.	First pre-medical aid with educational medical practice	3,00	Graded credit
MC 12.	Computer simulation in pharmacy	3,00	Graded credit
MC 13.	Microbiology with the basics of immunology	5,00	Exam

MC 14.	General and inorganic chemistry	6,00	Exam
MC 15.	Human anatomy and physiology	5,00	Graded credit
MC 16.	Higher Mathematics and Statistics	3,50	Graded credit
MC 17.	Biological physics with physical methods of analysis	4,50	Graded credit
The cycle of professional training subjects			
MC 18.	Medicines technology	12,00	Exam
MC 19.	Hygiene in pharmacy and ecology	3,00	Credit
MC 20.	Pharmaceutical Chemistry	13,00	Exam
MC 21.	Pharmacognosy	9,00	Exam
MC 22.	Pharmacology	9,00	Exam
MC 23.	Pharmaceutical law and legislation	3,00	Credit
MC 24.	Extreme medicine	3,00	Credit
MC 25.	Clinical pharmacy and pharmaceutical care	9,00	Exam
MC 26.	Pharmaceutical Management and Marketing	6,00	Exam
MC 27.	Organization and economics of pharmacy	6,00	Exam
MC 28.	Pharmacotherapy with pharmacokinetics	3,00	Exam
MC 29.	Pharmaceutical and medical goods	4,00	Graded credit
MC 30.	Toxicological and marine chemistry	4,00	Graded credit
MC 31.	Pharmacoeconomics	3,00	Credit
MC 32.	Labor protection and labor protection in the industry	3,00	Credit
MC 33.	Medical toxicology	3,00	Credit
MC 34.	Pharmaceutical Biotechnology	3,00	Credit
MC 35.	Quality systems in pharmacy	3,00	Credit

MC 36.	Biofarmation	3,00	Credit
MC 37.	Standardization of medicines	3,00	Graded credit
MC 38.	Social Pharmacy	3,00	Credit
MC 39.	Technology of medicinal cosmetics	3,00	Credit
MC 40.	Resource knowledge of medicinal plants	3,00	Credit
Total volume of mandatory components:		192,00	
Optional components of EP			
The cycle of general training subjects			
OC 1.	History of Ukraine and Ukrainian Culture	3,00	Credit
OC 2.	Foreign Language	3,00	Credit
OC 3.	Fundamentals of chemical metrology	3,00	Credit
OC 4.	Biology with the basics of genetics	4,00	Graded credit
OC 5.	Biogenic elements	5,00	Credit
OC 6.	Introduction to pharmacy	3,00	Credit
OC 7.	Information technology in pharmacy	5,00	Graded credit
OC 8.	**Life Safety; Basics of Bioethics and Biosafety**	3,00	Credit
OC 9.	Ethics and deontology in pharmacy	3,00	Credit
OC 10.	Religious studies	4,00	Credit
OC 11.	Modern civilization and culture	4,00	Credit
OC 12.	Psychology of communication. Basics of Consumer Behavior in Pharmacy	5,00	Credit
OC 13.	Physical Education		Credit
The cycle of professional training subjects			
OC 14.	Educational practice in pharmacognosy	3,00	Graded credit
OC 15.	Side effects of medicines	4,00	Credit
OC 16.	Physico-chemical analysis in the creation of drugs	4,00	Credit

OC 17.	Factors and mechanisms of pharmacological activity and drug toxicity at the stages of pharmacokinetics	4,00	Credit
OC 18.	Phytotherapy	5,00	Credit
OC 19.	Homeopathic remedies	3,00	Credit
OC 20.	Intellectual Property and International Marketing in Pharmacy	4,00	Credit
OC 21.	Training of reserve officers in the field of knowledge "Health". Specialty "Pharmacy"	3,00	Graded credit
The total volume of non-mandatory components:		75,00	
MC 41.	Practical training on pharmaceutical botany	3,00	Graded credit
MC 42.	Industrial pharmaceutical practices by specialization	30,00	Graded credit
TOTAL VOLUME OF EDUCATIONAL PROGRAMME		300,00	

2.2. Structural and logic pattern of education program

Schedule of studying of components of educational professional program «Pharmacy, manufacturing pharmacy»

Discipline code	Components of educational program (courses of study, term projects (papers), practical training, qualifying work)
I term	
MC 1.	Business Ukrainian language
MC 4.	Latin language
MC 14.	General and inorganic chemistry
MC 15.	Human anatomy and physiology
MC 16.	Higher mathematics and statistics
MC 17.	Biophysics with physical analysis
OC 1.	History of Ukraine and Ukrainian culture
OC 2.	Foreign language
OC 4.	Biology with basis of genetics
OC 10.	Religiology
OC 11.	Modern civilization and culture
II term	

MC 2.	Philosophy
MC 4.	Latin language
MC 14.	General and inorganic chemistry
MC 15.	Human anatomy and physiology
MC 17.	Biophysics with physical analysis
OC 5.	Biogenic elements
OC 6.	Introduction to pharmacy
OC 8.	Health and safety; Basics of bioethics and biosafety
OC 9.	Ethics and deontology in pharmacy
OC 13.	Physical education
	III term
MC 3.	Business Foreign language
MC 6.	Physical and Colloid Chemistry
MC 7.	Physiopathology
MC 8.	Pharmaceutical botany
MC 9.	Organic chemistry
MC 10.	Analytical chemistry
MC 11.	Paramedical firs aid with introductory medical practice
MC 13.	Microbiology with basics of Immunology
OC 7.	Information technology in Pharmacy
	IV term
MC 6.	Physical and Colloid Chemistry
MC 7.	Physiopathology
MC 8.	Pharmaceutical botany
MC 9.	Organic chemistry
MC 10.	Analytical chemistry
MC 13.	Microbiology with basics of Immunology
MC 19.	Hygiene in pharmacy and Ecology
MC 41.	Practical training in pharmaceutical botany
OC 3.	Basics of Chemical metrology
OC 12.	Psychology of Communication. Basics of consumer's behavior in Pharmacy.
OC 13.	Physical education
	V term
MC 5.	Biochemistry
MC 12.	Computer modelling in pharmacy
MC 18.	Drug technology
MC 20.	Pharmaceutical chemistry
MC 21.	Pharmacognosy
MC 22.	Pharmacology
MC 23.	Pharmaceutical laws and regulations

OC 16.	Physicochemical analysis in drug creation
	VI term
MC 5.	Biochemistry
MC 18.	Drug technology
MC 20.	Pharmaceutical chemistry
MC 21.	Pharmacognosy
MC 22.	Pharmacology
MC 24.	Extreme medicine
OC 15.	Side effects of Drugs
OC 17.	Factors and mechanisms of pharmacological activity and drug toxicity at the stage of pharmacokinetics
OC 21.	Qualifications of reserve officers in branch of knowledge «Health care». Specialty «Pharmacy».
	VII term
MC 18.	Drug technology
MC 20.	Pharmaceutical chemistry
MC 27.	Organization and pharmaceutical economics
MC 28.	Pharmacotherapy with pharmacokinetics
MC 30.	Toxicologic and forensic chemistry
MC 32.	Labor protection and occupational safety in the field
MC 33.	Drug toxicology
OC 18.	Phytotherapy
OC 19.	Homeopathy
	VIII term
MC 18.	Drug technology
MC 20.	Pharmaceutical chemistry
MC 25.	Clinical pharmacy and pharmaceutic tutelage.
MC 26.	Pharmaceutical management and marketing.
MC 27.	Organization and pharmaceutical economics
MC 29.	Pharmaceutic and medical merchandising
MC 30.	Toxicologic and forensic chemistry
MC 31.	Pharmacoeconomics
OC 14.	Practical training in pharmacy
OC 20.	Intellectual property and international marketing in pharmacy.
	IX term
MC 20.	Pharmaceutical chemistry
MC 25.	Clinical pharmacy and pharmaceutic tutelage.
MC 26.	Pharmaceutical management and marketing.
MC 34.	Pharmaceutical biotechnology
MC 35.	Quality systems in pharmacy
MC 36.	Biopharmaceutics

MC 38.	Social pharmacy
MC 40.	Resource studies of medicinal plants
	X term
MC 37.	Unification of therapeutic pharmaceutical agents.
MC 39.	Technology of therapeutic cosmetic agents.
MC 42.	Work experience in the field of study.

3. Appraisal form of applicants for university degree

Assessment of graduates of educational program of specialty 226 «Pharmacy, manufacturing pharmacy» is set in form of a common state qualification exam and (according to the academic decision of faculty) state thesis in Master degree and should be matured by documentation of standard pattern awarded postgraduate degree in completed qualification: Master of Pharmacy in specialty «Pharmacy».

Assessment is carried out in the public.

4

4. Compliance Matrix of program competencies to the components of the educational program

	МС 1	МС 2	МС 3	МС 4	МС 5	МС 6	МС 7	МС 8	МС 9	МС 10	МС 11	МС 12	МС 13	МС 14	МС 15	МС 16	МС 17	МС 18	МС 19	МС 20	МС 21	МС 22	МС 23	МС 24	МС 25	МС 26	МС 27	МС 28	МС 29	МС 30	МС 31	МС 32	МС 33	МС 34	МС 35
GC 1		•																									•				•				
GC 2			•	•		•		•	•		•	•	•				•			•	•	•		•	•		•	•		•		•			
GC 3																			•														•		
GC 4						•			•					•		•				•											•				
GC 5																							•				•							•	
GC 6				•																•		•			•		•	•							
GC 7																				•		•			•		•	•			•				
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PC 16							•	•		•										•	•	•												•	
PC 17																										•	•		•						
PC 18																•		•								•	•		•					•	
PC 19										•										•														•	
PC 20									•	•						•	•			•														•	

	ЗС	ЗС	ЗС	ЗС	ЗС	ЗС	ЗС	ОС 1	ОС 2	ОС 3	ОС 4	ОС 5	ОС 6	ОС 7	ОС 8	ОС 9	ОС 10	ОС 11	ОС 12	ОС 13	ОС 14	ОС 15	ОС 16	ОС 17	ОС 18	ОС 19	ОС 20	ОС 21
GC 1		•						•								•	•	•	•	•								
GC 2				•		•			•	•		•	•			•			•	•		•		•	•	•	•	
GC 3																												
GC 4														•							•							•
GC 5																											•	
GC 6	•			•									•				•	•				•		•		•	•	
GC 7				•																		•		•		•	•	
GC 8									•																			
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GC 10		•		•																		•		•		•	•	
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GC 12	•			•																		•		•		•	•	
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GC 14		•						•									•	•									•	
PC 1											•																	

PC 2				•																	•		•		•		
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PC 19	•						•							•								•					
PC 20	•						•							•								•					

5. Provision matrix of program educational outcomes (PEO) by relevant components of educational program

	GC 1	GC 2	GC 3	GC 4	GC 5	GC 6	GC 7	GC 8	GC 9	GC 10	GC 11	GC 12	GC 13	GC 14	GC 15	GC 16	GC 17	GC 18	GC 19	GC 20	GC 21	GC 22	GC 23	GC 24	GC 25	GC 26	GC 27	GC 28	GC 29	GC 30	GC 31	GC 32	GC 33	GC 34	GC 35
PEO 1		•																									•								
PEO 2		•	•	•		•		•	•		•	•	•				•			•	•	•		•	•		•	•		•	•		•		
PEO 3																			•														•		
PEO 4		•				•			•					•		•				•							•								
PEO 5																							•				•							•	
PEO 6				•																•		•			•		•	•							
PEO 7																				•		•			•		•	•			•				
PEO 8	•		•																																
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PEO 14		•																				•			•		•	•			•				•
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PEO 31										•						•	•			•														•	
PEO 32									•	•						•				•														•	

	GC	GC	GC	GC	GC	GC	GC	OC 1	OC 2	OC 3	OC 4	OC 5	OC 6	OC 7	OC 8	OC 9	OC 10	OC 11	OC 12	OC 13	OC 14	OC 15	OC 16	OC 17	OC 18	OC 19	OC 20	OC 21
PEO 1		•						•								•	•	•	•	•							•	
PEO 2		•				•	•	•	•	•		•	•			•	•	•	•	•		•		•	•	•	•	
PEO 3																												
PEO 4		•						•						•		•	•	•	•	•	•						•	•
PEO 5																											•	
PEO 6	•					•							•				•	•				•		•		•	•	
PEO 7						•																•		•		•	•	
PEO 8									•																			
PEO 9														•														
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PEO 13											•																	
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PEO 31	•						•								•								•					
PEO 32	•						•								•								•					

GC - general competences of the specialty, **PC** – professional competence, **PEO** – program educational outcomes; • - acquired competence

Requirements for the availability of the system of internal quality assurance of higher education (Determined in accordance with the European Standards and Guidelines for Quality Assurance in Higher Education (ESG) and Article 16 of the Law of Ukraine "On Higher Education")		
1	*Policies and procedures of quality assurance of education*	Defined and legitimized in the documents: Law of Ukraine "On Higher Education" dated July 1, 2014, No. 1556-VII, Standards and Recommendations on Quality Assurance in the European Higher Education, Ukraine national standard "Quality Management System" ISO 9001:2015. Quality assurance principles of education - compliance with European and national standards of higher education quality; - autonomy of the higher education institution, which is responsible for ensuring the quality of learning activity and the quality of higher education; - monitoring quality; - systematic approach, involving quality control at all stages of the educational process; - continuous quality improvement of the educational process; - openness of information at all stages of quality assurance. Quality assurance procedures: - assurance of research and educational environment; - improvement of planning of educational activities: monitoring and periodic updating of the educational program; - quality separation of higher education student body of Master degree educational qualification; - development of information systems in order to improve the management of the educational process; - ensuring the publicity of information about the universities activities; - creation of an effective system of prevention and detection of academic plagiarism in scientific and methodological work of university staff and higher education graduates of the master's degree; - formation of an effective system of prevention of corruption and bribery in the educational process of higher educational institutions.
2	*Monitoring and periodic review of educational programs*	The educational process at the qualification level Master degree is carried out up to standard of higher education and developed for its basis the educational program. The monitoring and periodic review of the educational program shall be performed in accordance with the provisions developed by the university. The criteria for revision of the educational program are formulated as a result of feedback from scientific and pedagogical workers, students, employers, and as a result of forecasting the development of the industry, the public needs and the labor market. The indicators of modernity of the educational program are: - updating according to the current state of Public health care; - participation of employers in the development and implementation of changes in the educational program; - positive feedback of reviewers on the educational program; - the satisfaction level of graduated students with the content of the

		educational program;
3	*Prevention and Detection of Academic Plagiarism*	Implement measures: - teamformation of higher educational institutions that does not accept and does not allow academic insecurity; - creating conditions of intolerance to cases of academic plagiarism; - formation of expert's panel because of recognizing of academic plagiarism in research articles, monographs, textbooks, educational and methodical publications, thesis, etc .;

Guarantor of the syllabus, project team manager:
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Economics and Technology
Doctor of Pharmacy, Professor T. Hroshovyi