

THE MINISTRY OF HEALTH OF UKRAINE  
NATIONAL UNIVERSITY OF PHARMACY

**APPROVED**



Acting rector of the National  
University of Pharmacy

*[Signature]* prof. Alla Kotvitska

02" May 2023

Adopted at a meeting of the Academic  
Council of the NUPh,  
protocol No. 4 from 04.28.2023

**CATALOG**

**optional educational components**  
**second (masters) level of higher education**  
**educational program "Pharmacy"**  
**specialty 226 Pharmacy, industrial pharmacy**

## **Procedure of implementation by the applicants of higher education of the right to choose educational component**

According to article 15, paragraph 62, of the Law of Ukraine "On higher education", the applicants of higher education have the right to choose the educational component within the limits stipulated by the relevant educational program on the curriculum in the amount of not less than 25% of the total number of credits provided for this level of higher education.

Selective educational components are aimed at ensuring general and professional competences.

The catalog contains an annotated list of educational components that are offered to the applicants of higher education in accordance with the curriculum.

The number and volume (in ECTS credits) of educational components that can be chosen by the applicants of higher education is determined by the curriculum:

- 1st-year higher education applicants – choose 3 educational components in the first semester, amounting to 10 ECTS credits, and 3 educational components in the second semester, amounting to 10 ECTS credits;
- II-year higher education applicants – choose 2 educational components in the third semester, which amounts to 7 ECTS credits, and 3 educational components in the fourth semester, which amounts to 9 ECTS credits;
- third-year higher education applicants – choose 2 educational components in the fifth semester, which amounts to 6 ECTS credits, and 3 educational components in the sixth semester, which amounts to 10 ECTS credits;
- 4th year higher education applicants – choose 3 educational components in the seventh semester, which amounts to 10 ECTS credits, and 2 educational components in the eighth semester, which amounts to 7 ECTS credits;
- 5th year higher education applicants – choose 4 educational components in the tenth semester, which is 12 ECTS credits.

Elective educational components of higher education applicants are selected according to the "Regulations on the procedure of implementation of the right to choose educational components in the NUPh".

## CONTENT

<b>Elective educational components of the I course of the first semester</b>	page
<i>Team building</i>	5
<i>The basics of brand management</i>	6
<i>Information Technology in Pharmacy</i>	7
<i>European Standard of Computer Competence</i>	8
<i>Logic</i>	9
<i>Theory of Civilizations and Intercultural Communication</i>	10
<b>Elective educational components of the I course of the second semester</b>	
<i>Biology and Fundamentals of Genetics</i>	11
<i>Cellular Biology</i>	12
<i>Chemistry of Elements and Their Compounds</i>	13
<i>Fundamentals of Quantitative Calculations in Pharmacy</i>	14
<i>Ukrainian is professionally Oriented</i>	15
<i>Ukrainian Language</i>	16
<b>Elective educational components of the II course of the third semester</b>	
<i>Bioactivity of Inorganic Compounds</i>	17
<i>Modern Issues of Molecular Biology</i>	18
<i>Ukrainian is professionally Oriented</i>	15
<i>Ukrainian Language</i>	16
<b>Elective educational components of the II course of the fourth semester</b>	
<i>Modeling of Scientific Research</i>	19
<i>Basics of Consumer Behavior in Pharmacy</i>	20
<i>Instrumental Methods of Analysis</i>	21
<i>Chromatographic Research Methods</i>	22
<i>Statistical Methods in Pharmacy</i>	23
<i>Mathematical Methods in Pharmacy</i>	24
<b>Elective educational components of the III year of the fifth semester</b>	
<i>Basics of Economics in Healthcare</i>	25
<i>Pharmaceutical Information</i>	26
<i>Digital Marketing Tools</i>	27
<i>Basics of Economic Knowledge</i>	28
<i>Functional Biochemistry</i>	29
<i>Biochemical Transformation of Drugs in the Body</i>	30
<i>Bioethics and Biosafety</i>	31
<b>Elective educational components of the III year of the sixth semester</b>	
<i>Express Diagnostics in Healthcare</i>	32
<i>Laboratory Diagnostics</i>	33

<i>Tropical Infections</i>	34
<i>Epidemiology of Diseases</i>	35
<i>Pathological Physiology of Diseases of Civilization</i>	36
<i>Pharmaceutical Bromatology</i>	37
<i>Nutrition</i>	38
<b>Elective educational components of the IV course of the seventh semester</b>	
<i>Medical and Analytical Toxicology</i>	39
<i>Toxicological Chemistry</i>	40
<i>Technology of Homeopathic Medicines</i>	41
<i>Technology of Veterinary Preparations</i>	42
<i>Pharmacognostic Basics of Phytotherapy</i>	43
<i>Side Effects of Drugs</i>	44
<i>Modern Methods of Biological Systems Research</i>	45
<i>Pharmacogenetics</i>	46
<i>Current Issues of Drug Addiction and Toxic Addiction</i>	47
<b>Elective educational components of the IV course of the 8th semester</b>	
<i>Pharmaceutical Biotechnology</i>	48
<i>Technologies of Microbial Synthesis of Drugs</i>	49
<i>Technology of cosmetics</i>	50
<i>Pharmacy-sold cosmetic products</i>	51
<b>Elective educational components of the V course of the tenth semester</b>	
<i>Pharmacognostic Analysis of New Medicinal Herbal Raw Material</i>	52
<i>Biopharmacy</i>	53
<i>Drug Standardization</i>	54
<i>Assessment of Health Care Technologies</i>	55
<i>Systemic Analysis of Health Institutions</i>	56
<i>Basics of Rational Nutrition</i>	57
<i>Pharmacoeconomics</i>	58
<i>Good Pharmaceutical Practices</i>	59
<i>Quality Systems in Pharmacy</i>	60

## LIST OF ELECTIVE EDUCATIONAL COMPONENTS

### 1. Team building

The department that provides the educational component	Department of Pharmaceutical Management and Marketing
Abstract of the educational component	Team building is a relevant and important direction in modern business, educational space and organizational environment where teamwork is present, as it creates favorable conditions for increasing productivity, efficiency and innovation of teamwork. The ability to effectively interact in a team and solve problems is extremely important in the professional and personal life of students of higher education. Today's job market often requires cooperation and teamwork. Team building helps higher education students understand how to work effectively in a group, more rationally use time and resources, trust each other and achieve common goals. The subject of study of the educational component is the principles, methods, tools and technologies of team building.
Level of higher education	second (masters) level
Course, semester	I course, 1 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1KwJMb4jIVKVVGi50aq6nrupYRbUsEFzE/view?usp=drive_link">https://drive.google.com/file/d/1KwJMb4jIVKVVGi50aq6nrupYRbUsEFzE/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://mmf.nuph.edu.ua/wp-content/uploads/2023/08/27-presentation-team-building-1.pdf">https://mmf.nuph.edu.ua/wp-content/uploads/2023/08/27-presentation-team-building-1.pdf</a>

## 2. The basics of brand management

The department that provides the educational component	Department of Pharmaceutical Management and Marketing
Abstract of the educational component	“The Basics of Brand Management” provides higher education students with an understanding of the system of special theoretical knowledge on the development and development of brands of pharmaceutical products, an understanding of the importance of brands in the marketing activities of pharmaceutical enterprises; acquisition of practical skills in the development of brand strategies, formation of skills to apply knowledge of brand management in the process of further education and in professional activities.
Level of higher education	second (masters) level
Course, semester	I course, 1 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1Q9bke6pAngD6oq8-c5R1VQ0ZkVbjpXGX/view?usp=drive_link">https://drive.google.com/file/d/1Q9bke6pAngD6oq8-c5R1VQ0ZkVbjpXGX/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://drive.google.com/file/d/1qP9usG09_mmMhdEaiE5Vomj1qi_vOxq1/view?usp=drive_link">https://drive.google.com/file/d/1qP9usG09_mmMhdEaiE5Vomj1qi_vOxq1/view?usp=drive_link</a>

### 3. Information Technology in Pharmacy

The department that provides the educational component	Department of fundamental and social-humanitarian sciences
Abstract of the educational component	The educational component "Information Technologies in Pharmacy" studies informational processes in the field of pharmacy (acquisition, storage, transformation, and transmission of pharmaceutical information) using modern software and technical tools, as well as cutting-edge information technologies. The aim of this educational component is to develop theoretical knowledge and practical skills in using advanced information technologies and modern applications in the field of pharmacy, to teach the processing of pharmaceutical and medical-biological information with information and communication technologies, and to ensure the development of information competence in future pharmacists.
Level of higher education	second (masters) level
Course, semester	I course, 1 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1au0P4ayAxAsE1ne--566aKzOIzObdpeN/view?usp=sharing">https://drive.google.com/file/d/1au0P4ayAxAsE1ne--566aKzOIzObdpeN/view?usp=sharing</a>
Presentation of the educational component	<a href="https://drive.google.com/file/d/1_ljA4wEa6aSAGr79yE7waJ14-CmKOS7c/view?usp=sharing">https://drive.google.com/file/d/1_ljA4wEa6aSAGr79yE7waJ14-CmKOS7c/view?usp=sharing</a>

#### 4. European Standard of Computer Competence

The department that provides the educational component	Department of fundamental and social-humanitarian sciences
Abstract of the educational component	The educational component "European Standard of Computer Competence" covers European and international certification programs such as ECDL (European Computer Driving License) and ICDL (International Computer Driving License), as well as informational processes involving the use of modern software and technical tools. The aim of this educational component is to form and develop foundational competence in accordance with the requirements of the European and international certification programs (ECDL and ICDL) in the field of information and communication technologies (ICT) to ensure effective using of office software.
Level of higher education	second (masters) level
Course, semester	I course, 1 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1BA2A05U835KLAGsNZPVTjUDafIL0NO4p/view?usp=sharing">https://drive.google.com/file/d/1BA2A05U835KLAGsNZPVTjUDafIL0NO4p/view?usp=sharing</a>
Presentation of the educational component	<a href="https://drive.google.com/file/d/1uOpZP0MwLurkYh6dukt2EWQMBInEvuEL/view?usp=sharing">https://drive.google.com/file/d/1uOpZP0MwLurkYh6dukt2EWQMBInEvuEL/view?usp=sharing</a>



### 5. Logic

The department that provides the educational component	Department of fundamental and social-humanitarian sciences
Abstract of the educational component	Logic is a philosophical discipline, the study of which contributes to the conscious and fruitful use of principles, forms, methods and laws of correct thinking, as well as - mastering the skills of analysis and organization of information. Logic is one of the basic academic disciplines that contributes to the awareness of future professionals of the importance and role of logical thinking in professional and everyday activities.
Level of higher education	second (masters) level
Course, semester	I course, 1 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1gsfyRTCo2y8kwxQdNCcWnei6YrZx9FV/view?usp=drive_link">https://drive.google.com/file/d/1gsfyRTCo2y8kwxQdNCcWnei6YrZx9FV/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://docs.google.com/presentation/d/1wvtYDcw6zwGXxKQzS4Drao2FvWoAOP9f/edit?usp=drive_web&amp;oid=110841834881897977226&amp;rtpof=true">https://docs.google.com/presentation/d/1wvtYDcw6zwGXxKQzS4Drao2FvWoAOP9f/edit?usp=drive_web&amp;oid=110841834881897977226&amp;rtpof=true</a>

## 6. Theory of Civilizations and Intercultural Communication

The department that provides the educational component	Department of fundamental and social-humanitarian sciences
Abstract of the educational component	The educational component "Theory of Civilizations and Intercultural Communication" focuses on the study of important factors of spiritual enrichment, intellectual development, the formation of a worldview and methodological paradigm and one's own civilizational identity. Globalization, as a process and a growing trend of our time, is rapidly gaining a global scale, generating new contradictory consequences. The modern era requires a new paradigm in relations between peoples and states, a new geopolitical structure of the world structure, safe for the whole world and its individual parts. Under such conditions, the imperative of current world politics becomes the interaction of civilizations, where contradictions are manifested, which can become decisive for the XXI century. On the one hand, the economic, technological, and informational integration of the world community is observed, and on the other hand, the strengthening of integration leads to the growth of civilizational self-awareness. A conglomerate of civilizational societies with different histories, traditions, languages, and religions is emerging, which develop, interact and influence each other. These relatively independent and original societies have to coexist in a single information space.
Level of higher education	second (masters) level
Course, semester	I course, 1 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1XNP-XP870cMPT4dE17-Si0xZYeMscGT/view?usp=drive_link">https://drive.google.com/file/d/1XNP-XP870cMPT4dE17-Si0xZYeMscGT/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://drive.google.com/file/d/1b5EbMRiIvp6zj3gveWLGU9jsY-30iuRU/view?usp=drive_link">https://drive.google.com/file/d/1b5EbMRiIvp6zj3gveWLGU9jsY-30iuRU/view?usp=drive_link</a>

## 7. Biology and Fundamentals of Genetics

The department that provides the educational component	Department of Biological Chemistry and Veterinary Medicine
Abstract of the educational component	Educational component "Biology and Fundamentals of Genetics" is an educational discipline aimed at forming knowledge and practical skills in human biology for further assimilation by students of a block of disciplines that provide natural-scientific and professional-practical training.
Level of higher education	second (masters) level
Course, semester	I course, 2 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/196Qz0h3WvRhAxzv68YLroKRkyHWOEa-T/view?usp=drive_link">https://drive.google.com/file/d/196Qz0h3WvRhAxzv68YLroKRkyHWOEa-T/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://biochem.nuph.edu.ua/wp-content/uploads/2023/08/biology-and-fundamentals-of-genetics2.pdf">https://biochem.nuph.edu.ua/wp-content/uploads/2023/08/biology-and-fundamentals-of-genetics2.pdf</a>

## 8. Cellular Biology

The department that provides the educational component	Department of Biological Chemistry and Veterinary Medicine
Abstract of the educational component	Educational component "Cellular Biology" is aimed at: obtaining holistic ideas about the matrix processes occurring in a living cell; replication, transcription and broadcasting; study at the modern level of knowledge of the structural organization of the most important biopolymers; proteins and nucleic acids; acquaintance with modern enzymology, the structure and functions of enzymes, enzyme systems and their regulation in the cell; study of the main metabolic pathways, bioenergetic mechanisms, the interrelationship of carbohydrate, lipid and protein exchanges in the non-regulatory systems of cell metabolism
Level of higher education	second (masters) level
Course, semester	I course, 2 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1dxPPW8WOFpnU0k505I1gEwSiUcGybwov/view?usp=drive_link">https://drive.google.com/file/d/1dxPPW8WOFpnU0k505I1gEwSiUcGybwov/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://biochem.nuph.edu.ua/wp-content/uploads/2023/08/cellular-biology2.pdf">https://biochem.nuph.edu.ua/wp-content/uploads/2023/08/cellular-biology2.pdf</a>

## 9. Chemistry of Elements and Their Compounds

The department that provides the educational component	Department of General Chemistry
Abstract of the educational component	<p>"Chemistry of elements and their compounds" is a selective natural discipline in the system of higher pharmaceutical education, knowledge of which is necessary for fruitful, creative activity of specialists in the field of pharmacy. It develops a dialectical way of thinking, expands and deepens scientific knowledge about the chemical and biological properties of chemical elements and their inorganic compounds, as well as identifies ways to solve applied problems in the field of pharmacy.</p> <p>Knowledge of the discipline "Chemistry of elements and their compounds" allows future professionals to master the most essential and modern ideas about the chemical properties and biological activity and mechanisms of interaction of inorganic substances used in medical and pharmaceutical practice with biomolecules and their biotransformation in humans.</p>
Level of higher education	second (masters) level
Course, semester	I course, 2 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1GNaaaGx7L5KUmA6uRQ_fbjFnygElmkaN/view?usp=sharing">https://drive.google.com/file/d/1GNaaaGx7L5KUmA6uRQ_fbjFnygElmkaN/view?usp=sharing</a>
Presentation of the educational component	<a href="https://drive.google.com/file/d/1EDceJcSZV107y4gyZqu4gKg5oGqLRoWm/view?usp=drive_link">https://drive.google.com/file/d/1EDceJcSZV107y4gyZqu4gKg5oGqLRoWm/view?usp=drive_link</a>

## 10. Fundamentals of Quantitative Calculations in Pharmacy

The department that provides the educational component	Department of General Chemistry
Abstract of the educational component	The subject of study of the educational component "Fundamentals of Quantitative Calculations in Pharmacy" is the basic algorithms of chemical calculations, which are the basis of special practical tasks of a modern pharmacist.
Level of higher education	second (masters) level
Course, semester	I course, 2 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1xh-Zeq1SqRXzNJHlpKFkfuBIB0nhD9f/view?usp=drive_link">https://drive.google.com/file/d/1xh-Zeq1SqRXzNJHlpKFkfuBIB0nhD9f/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://drive.google.com/file/d/1AxU21J_gwDR9gjp01g_cHuTFiSzyc6N/view?usp=drive_link">https://drive.google.com/file/d/1AxU21J_gwDR9gjp01g_cHuTFiSzyc6N/view?usp=drive_link</a>

### 11. Ukrainian is professionally Oriented

The department that provides the educational component	Department of fundamental and social-humanitarian sciences
Abstract of the educational component	<p>The educational component is designed to increase language competence future specialists, facilitate their professional communication. The program uses a logical-speech approach, provides adapted professional mini-texts that can help applicants education, which are taught in English, to communicate in professional Ukrainian environment; knowledge of syntax, morphology, vocabulary, presented as the basis of the component.</p> <p>The subject of study of the educational component "Ukrainian is professionally Oriented" there are norms of the modern Ukrainian language, morphology, vocabulary, etc.</p>
Level of higher education	second (masters) level
Course, semester	I course, 2 semester II course, 3 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1Kmd2s2Tw_JJIqUxVnArga8k7uj-4hKhQ/view?usp=sharing">https://drive.google.com/file/d/1Kmd2s2Tw_JJIqUxVnArga8k7uj-4hKhQ/view?usp=sharing</a>
Presentation of the educational component	<a href="https://drive.google.com/file/d/1_TQafxQRjfVJZEM_g3HBen_ejSwxnWTn/view?usp=sharing">https://drive.google.com/file/d/1_TQafxQRjfVJZEM_g3HBen_ejSwxnWTn/view?usp=sharing</a>

## 12. Ukrainian Language

The department that provides the educational component	Department of fundamental and social-humanitarian sciences
Abstract of the educational component	The educational component is designed to form language the competence of future pharmacy specialists, to develop speaking, reading, and writing skills in the Ukrainian language, as well as the ability to understand the language by ear and communicate in everyday life and educational activity, which lays the foundation for the development of professional vocabulary. In the program uses a communicative-cognitive approach based on the principle building learning by analogy with real speech situations
Level of higher education	second (masters) level
Course, semester	I course, 2 semester II course, 3 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1xRQ4gWd8eXa1KuholRuaP5E300AhUZz/view?usp=sharing">https://drive.google.com/file/d/1xRQ4gWd8eXa1KuholRuaP5E300AhUZz/view?usp=sharing</a>
Presentation of the educational component	<a href="https://drive.google.com/file/d/1erQeCPmAVgC8QWrXYMebnZ_pEHbRn_5h/view?usp=sharing">https://drive.google.com/file/d/1erQeCPmAVgC8QWrXYMebnZ_pEHbRn_5h/view?usp=sharing</a>



### 13. Bioactivity of Inorganic Compounds

The department that provides the educational component	Department of General Chemistry
Abstract of the educational component	Bioactivity of inorganic compounds is a selective natural discipline in the system of higher pharmaceutical education, knowledge of which is necessary for the fruitful, creative activity of specialists in the field of pharmacy. It develops a dialectical thinking, improves scientific knowledge about the biological properties of chemical elements and their inorganic compounds, and also determines the ways of solving applied problems in the field of pharmacy.
Level of higher education	second (masters) level
Course, semester	II course, 3 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1qfqlVUtwbzIvecPBnxaapxn-aU-8vwqI/view?usp=drive_link">https://drive.google.com/file/d/1qfqlVUtwbzIvecPBnxaapxn-aU-8vwqI/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://drive.google.com/file/d/1hY_IJ_g7erh5PVPmSRMeHGhx3onWfO10/view?usp=drive_link">https://drive.google.com/file/d/1hY_IJ_g7erh5PVPmSRMeHGhx3onWfO10/view?usp=drive_link</a>

### 14. Modern Issues of Molecular Biology

The department that provides the educational component	Department of Biological Chemistry and Veterinary Medicine
Abstract of the educational component	Molecular biology is a branch of biology that studies biological processes at the level of biopolymers: nucleic acids and proteins and their supramolecular structures. The fundamental tasks of molecular biology are: establishing the molecular mechanisms of basic biological processes, such as the reproduction and implementation of genetic information, the biosynthesis of proteins and other processes determined by the structural-functional properties and interaction of nucleic acids and proteins, as well as the study of the regulatory mechanisms of these processes. The main directions of research: the organization of macromolecules and supramolecular formations, which determine such specific features of living matter as: self-regulation of systems, heredity, variability, growth and development; molecular mechanisms of processes in the cell: DNA biosynthesis, RNA synthesis on matrix DNA, protein biosynthesis on ribosomes, membrane transport, enzymatic catalysis and others; principles of regulation of macromolecular functions and processes in the cell; development of new methods and biotechnologies for practical use
Level of higher education	second (masters) level
Course, semester	II course, 3 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1PrAyyrs2IWU4MVhbbJdQvAyWukqzi3TE/view?usp=drive_link">https://drive.google.com/file/d/1PrAyyrs2IWU4MVhbbJdQvAyWukqzi3TE/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://docs.google.com/presentation/d/1yAankpMUjMbmn_s_onv8nBEt4cUpcAzYp/edit?usp=drive_link&amp;oid=109425656783422805708&amp;rtpof=true&amp;sd=true">https://docs.google.com/presentation/d/1yAankpMUjMbmn_s_onv8nBEt4cUpcAzYp/edit?usp=drive_link&amp;oid=109425656783422805708&amp;rtpof=true&amp;sd=true</a>

### 15. Modeling of Scientific Research

The department that provides the educational component	Department of Pharmaceutical Technology of Drugs
Abstract of the educational component	The introduction of “Modeling of scientific research” into the educational process is connected with the need for applicants of higher education to form a systematized complex of knowledge about the general principles, forms and methods of organizing and conducting scientific research and preparing for independent performance of scientific work and writing of a final qualification (master's) work. The specialist must 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, as well as analyze information obtained as a result of scientific research, generalize, systematize and use it in professional activity
Level of higher education	Second (master's) level
Course, semester	II course, 4 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1K0ca-G3HyXJ40iny6Lkq0z7QP4UHxwy9/view?usp=drive_link">https://drive.google.com/file/d/1K0ca-G3HyXJ40iny6Lkq0z7QP4UHxwy9/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://atl.nuph.edu.ua/wp-content/uploads/2023/08/modeling-of-scientific-research-2023.pdf">https://atl.nuph.edu.ua/wp-content/uploads/2023/08/modeling-of-scientific-research-2023.pdf</a>

## 16. Basics of Consumer Behavior in Pharmacy

The department that provides the educational component	Department of Pharmaceutical Management and Marketing
Abstract of the educational component	The study of consumer behavior in the pharmaceutical market is necessary to determine the model of consumer behavior, the formation of a rational range of medicines in pharmacies and the identification of problems related to consumer dissatisfaction with the affordability of necessary medicines and the quality of providing pharmaceutical care to the population. Obtaining by applicants of higher education the basics of knowledge in the field of consumer behavior research will contribute to their deeper understanding of the problems of interaction of specialists with consumers and the skills of identifying the needs of pharmacy customers in order to more fully satisfy them
Level of higher education	second (masters) level
Course, semester	II course, 4 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1gaVkjx8TY6jkLak-gMvEtes7OwUKhlz/view?usp=drive_link">https://drive.google.com/file/d/1gaVkjx8TY6jkLak-gMvEtes7OwUKhlz/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://mmf.nuph.edu.ua/wp-content/uploads/2023/08/presentation-2023.pdf">https://mmf.nuph.edu.ua/wp-content/uploads/2023/08/presentation-2023.pdf</a>

### 17. Instrumental Methods of Analysis

The department that provides the educational component	Department of General Chemistry
Abstract of the educational component	The subject of study of the educational component "Instrumental methods of analysis" (IMA) is the basic concepts of spectral methods of determining the structure of organic compounds (IR, UV, NMR spectroscopy) and mass spectrometry. These instrumental methods are widely used to determine the structure of synthetic and natural substances, as well as to control the quality of organic substances in high-tech production areas. The course lays the theoretical basis for understanding the processes that take place in an organic molecule during instrumental analysis, which makes it possible to make a reasonable choice of the analysis method.
Level of higher education	second (masters) level
Course, semester	II course, 4 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1oPkPn5kADyBZsfvtrdAsoQPyj-grwIuq/view?usp=drive_link">https://drive.google.com/file/d/1oPkPn5kADyBZsfvtrdAsoQPyj-grwIuq/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://drive.google.com/file/d/1Cz9XlimLODFz_24chrRAALluK9LQ-4pU/view?usp=drive_link">https://drive.google.com/file/d/1Cz9XlimLODFz_24chrRAALluK9LQ-4pU/view?usp=drive_link</a>

## 18. Chromatographic Research Methods

The department that provides the educational component	Department of Pharmaceutical chemistry
Abstract of the educational component	The subject of study of the selective educational component "Chromatographic methods of analysis" is modern instrumental chromatographic methods of analysis of medicinal substances; a set of theoretical foundations and experimental tools for conducting chromatographic analysis in the pharmacopoeial quality control of medicinal products; statistical processing of the results of chromatographic methods of drug quality control
Level of higher education	second (masters) level
Course, semester	II course, 4 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/17NhGYA4zlgEqZsIBqFDVqHF0mkdJqMo6/view?usp=drive_link">https://drive.google.com/file/d/17NhGYA4zlgEqZsIBqFDVqHF0mkdJqMo6/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://drive.google.com/file/d/1hL5Vy7pss72esyBQ4QMkp-1A3EWplZWZ/view?usp=drive_link">https://drive.google.com/file/d/1hL5Vy7pss72esyBQ4QMkp-1A3EWplZWZ/view?usp=drive_link</a>

### 19. Statistical Methods in Pharmacy

The department that provides the educational component	Department of fundamental and social and humanitarian sciences
Abstract of the educational component	Basic knowledge of “Statistical methods in pharmacy” helps form in students the competencies necessary for effective planning, statistical processing and analysis of the results of chemical experiments and biomedical research; application of modern statistical methods of calculation and analysis of socio-pharmaceutical indicators.
Level of higher education	second (masters) level
Course, semester	II course, 4 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1VRCFH8ivRJBXdftE6w1OA7IUA_CIhbWr/view?usp=sharing">https://drive.google.com/file/d/1VRCFH8ivRJBXdftE6w1OA7IUA_CIhbWr/view?usp=sharing</a>
Presentation of the educational component	<a href="https://drive.google.com/file/d/1rZUU0wqylnYolMfKgrqCs4AIytHDB9xh/view?usp=sharing">https://drive.google.com/file/d/1rZUU0wqylnYolMfKgrqCs4AIytHDB9xh/view?usp=sharing</a>

## 20. Mathematical Methods in Pharmacy

The department that provides the educational component	Department of fundamental and social and humanitarian sciences
Abstract of the educational component	The educational component "Mathematical Methods in Pharmacy" form and develop foundational competencies necessary for effective planning, statistical processing and analysis of the results of chemical experiments as well as clinical and biomedical trials; application of modern mathematical methods of calculation and analysis of socio-pharmaceutical indicators.
Level of higher education	second (masters) level
Course, semester	II course, 4 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1z_coEOf5oDWF0KRr92Tu1bFEST_LeNFb/view?usp=sharing">https://drive.google.com/file/d/1z_coEOf5oDWF0KRr92Tu1bFEST_LeNFb/view?usp=sharing</a>
Presentation of the educational component	<a href="https://drive.google.com/file/d/16kw3II9mfAupoeSUODgv87Qzaxfv8fAn/view?usp=sharing">https://drive.google.com/file/d/16kw3II9mfAupoeSUODgv87Qzaxfv8fAn/view?usp=sharing</a>



## 21. Basics of Economics in Healthcare

The department that provides the educational component	Department of organization of pharmacy and economics
Abstract of the educational component	The educational component "Fundamentals of the economy of the pharmaceutical industry" is the basis for further study of the organization and economy of pharmacy, pharmaceutical marketing and management, social economy, pharmacoeconomics, which involves the integration of teaching with the above-mentioned disciplines for the formation of skills to apply knowledge in the process of further education and professional activity. The advantages of studying the discipline are students' acquisition of market-economic thinking, clarification of the role of economic theory in the formation of economic policy and economic regulation, assimilation of the methodology of economic research to understand the market transformations taking place in the national economy and the pharmaceutical industry. The specialty of the discipline is its dynamism in view of changes in the socio-economic and political situation in the country, market conditions, changes in legislation, etc.
Level of higher education	second (masters) level
Course, semester	III course, 5 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1EvYjkEY8whK0ZGwjY-cgckCyT_C5bisL/view?usp=drive_link">https://drive.google.com/file/d/1EvYjkEY8whK0ZGwjY-cgckCyT_C5bisL/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://economica.nuph.edu.ua/wp-content/uploads/2023/08/basics-of-economics-in-healthcare.pdf">https://economica.nuph.edu.ua/wp-content/uploads/2023/08/basics-of-economics-in-healthcare.pdf</a>

## 22. Pharmaceutical Information

The department that provides the educational component	Department of Social pharmacy
Abstract of the educational component	The implementation of Pharmaceutical Information into the educational process is associated with the need to prepare future professionals in the field of information support for pharmaceutical activities, the organizational structure of the national pharmaceutical information system, communication processes as a key element in the transmission of pharmaceutical information, and the functioning of pharmaceutical information (modern information processing technologies) in pharmacies. A pharmaceutical worker is obliged to understand the importance of pharmaceutical information as an integral part of the professional activities of practical pharmacy specialists and the awareness of the population. After providing a complete answer, feel free to ask me any further questions if needed.
Level of higher education	second (masters) level
Course, semester	III course, 5 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1BF3YBQWZG-by0WJ-gMMjqQK70E5_MC_A/view?usp=drive_link">https://drive.google.com/file/d/1BF3YBQWZG-by0WJ-gMMjqQK70E5_MC_A/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://socpharm.nuph.edu.ua/wp-content/blogs.dir/10/files/2023/08/prezentatsiia_pharmaceutical-information.pdf">https://socpharm.nuph.edu.ua/wp-content/blogs.dir/10/files/2023/08/prezentatsiia_pharmaceutical-information.pdf</a>

### 23. Digital Marketing Tools

The department that provides the educational component	Department of Pharmaceutical Management and Marketing
Abstract of the educational component	The subject of study of the educational component "Digital Marketing Tools" is the theoretical foundations, categories, processes, tools, algorithms and trends in the use of digital channels for the promotion of companies and products. The purpose of teaching the educational component is the formation of knowledge, skills and competencies necessary for the organization of effective activities for the promotion of companies and products through digital channels. The main tasks of the educational component are to acquaint students with higher education with the main theoretical and practical aspects of the application of digital marketing, the formation of knowledge, skills and competencies necessary for the organization of effective activities for the promotion of companies and products through digital channels and the solution of specific marketing tasks in the field of digital marketing
Level of higher education	second (masters) level
Course, semester	III course, 5 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/19BGi1zRkb2-KEahMK-Aa7MrQ9p9tCtye/view?usp=drive_link">https://drive.google.com/file/d/19BGi1zRkb2-KEahMK-Aa7MrQ9p9tCtye/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://mmf.nuph.edu.ua/wp-content/uploads/2023/09/presentation-discipline-dmt-engl-2023.pdf">https://mmf.nuph.edu.ua/wp-content/uploads/2023/09/presentation-discipline-dmt-engl-2023.pdf</a>

## 24. Basics of Economic Knowledge

The department that provides the educational component	Department of Management and Quality Assurance in Pharmacy
Abstract of the educational component	The educational component "Basics of Economic Knowledge" is aimed at forming higher education applicants' understanding of economic phenomena and processes, mechanisms of economic functioning, which is aimed at forming their economic outlook and rational behaviour in various economic conditions. Its main tasks are the preparation of a qualified master who has basic knowledge of economic laws and the development of economic processes in society, and is able to apply them in social life and future professional activity
Level of higher education	second (masters) level
Course, semester	III course, 5 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1z3okZz_kXZWx3_6XOrz_7AQfstT8D6rN/view?usp=drive_link">https://drive.google.com/file/d/1z3okZz_kXZWx3_6XOrz_7AQfstT8D6rN/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://drive.google.com/file/d/1gHaUJNN6QgcpCtWgGitM23MOIFQCnh4K/view?usp=drive_link">https://drive.google.com/file/d/1gHaUJNN6QgcpCtWgGitM23MOIFQCnh4K/view?usp=drive_link</a>

## 25. Functional Biochemistry

The department that provides the educational component	Department of Biological Chemistry and Veterinary Medicine
Abstract of the educational component	The introduction of Functional Biochemistry into the educational process is related to the training of future specialists who possess a significant amount of theoretical and practical knowledge regarding the biochemical foundations of life: the chemical structure of organic compounds and the nature of metabolic processes occurring in the human body. Determine the advantages and disadvantages of drugs of various pharmacological groups, taking into account their chemical, physicochemical, biopharmaceutical, pharmacokinetic and pharmacodynamic characteristics. A specialist must be able to explain the rationality of the use of pharmaceuticals, using knowledge of the factors affecting the processes of absorption, distribution, deposition, metabolism and excretion of the medicinal product, must be able to understand the essence and mechanisms of those biochemical processes that underlie the implementation of the main physiological functions of the body, analyze changes in the chemical composition of organs and tissues under physiological conditions and pathological conditions.
Level of higher education	second (masters) level
Course, semester	III course, 5 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1V3ID1v_wbKz34tUvqGF9jClslcr9_Jiu/view?usp=drive_link">https://drive.google.com/file/d/1V3ID1v_wbKz34tUvqGF9jClslcr9_Jiu/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://biochem.nuph.edu.ua/wp-content/uploads/2023/08/functional-biochemistry-prezentacija-vibirkovoyi-disciplini.pdf">https://biochem.nuph.edu.ua/wp-content/uploads/2023/08/functional-biochemistry-prezentacija-vibirkovoyi-disciplini.pdf</a>

## 26. Biochemical Transformation of Drugs in the Body

The department that provides the educational component	Department of Biological Chemistry and Veterinary Medicine
Abstract of the educational component	The introduction of the educational component “Biochemical Transformation of Drugs in the Body” will allow students to form a holistic and systemic understanding of the biochemical mechanisms that ensure the biotransformation of xenobiotics in the body, the role of the components of the biotransformation system in the neutralization of various exogenous substances and in maintaining the main parameters of homeostasis. The educational component “Biochemical Transformation of Drugs in the Body” will be aimed at forming the ability to carry out systemic analysis and screening of various exogenous substances and understand the ways of metabolism of these substances in the body, will form in the students an idea about the classification of xenobiotics and the mechanisms of their biotransformation in the body under the action of phase I and II enzymes detoxification of toxic substances.
Level of higher education	second (masters) level
Course, semester	III course, 5 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1E-Y0TWEIMNtJY6WSLwlKYP0JMrwIqgnS/view?usp=drive_link">https://drive.google.com/file/d/1E-Y0TWEIMNtJY6WSLwlKYP0JMrwIqgnS/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://biochem.nuph.edu.ua/wp-content/uploads/2023/08/biochemical-transformation-of-medications-in-the-body-presentacija-vibirkovoyi-disciplini.pdf">https://biochem.nuph.edu.ua/wp-content/uploads/2023/08/biochemical-transformation-of-medications-in-the-body-presentacija-vibirkovoyi-disciplini.pdf</a>

## 27. Bioethics and Biosafety

The department that provides the educational component	Department of Clinical Pharmacology and Clinical Pharmacy
Abstract of the educational component	<p>«Bioethics and Biosafety» is optional educational component, which provides the basis for the development of knowledges and skills that are determined by the ultimate goals of the program, necessary for the next pharmacist's professional activity, in particular, pharmaceutical care and is an important link between the modern arsenal of humanitarian knowledge and the problems of medical science and practices.</p> <p>The purpose of teaching the educational component «Bioethics and Biosafety» is the consideration and resolution of discussing ethical issues that may arise in the medical and pharmaceutical practice, during biomedical research and experiments, or in the case of a combination of these types of professional activities.</p>
Level of higher education	second (masters) level
Course, semester	III course, 5 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1Zw2wi6R_198WT0IgtQBQs8rj-pjhCtG6/view?usp=drive_link">https://drive.google.com/file/d/1Zw2wi6R_198WT0IgtQBQs8rj-pjhCtG6/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://drive.google.com/file/d/1FFLTKGgYeI2427KqzVLbn-AM3NPn37Jt/view?usp=drive_link">https://drive.google.com/file/d/1FFLTKGgYeI2427KqzVLbn-AM3NPn37Jt/view?usp=drive_link</a>

## 28. Express Diagnostics in Healthcare

The department that provides the educational component	Department of Clinical Laboratory Diagnostics
Abstract of the educational component	The introduction of Express-diagnostics in Healthcare into the pedagogical process is connected with the need to contribute to the formation of students of higher education theoretical knowledge and practical skills necessary to use the possibilities of providing consumers with affordable and high-quality methods of the latest emergency test express-diagnostics in order to reduce time and distance from the consumer to qualitative analysis and provision of emergency medical assistance to victims of emergency situations of a peaceful and military nature.
Level of higher education	second (masters) level
Course, semester	III course, 6 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/191eyN49_ca4Nq0nl7ci2tueWTORUN6oN/view">https://drive.google.com/file/d/191eyN49_ca4Nq0nl7ci2tueWTORUN6oN/view</a>
Presentation of the educational component	<a href="https://drive.google.com/file/d/1TbgwwqD2e2_340xGMgvOnjiRaCEJbcEW/view">https://drive.google.com/file/d/1TbgwwqD2e2_340xGMgvOnjiRaCEJbcEW/view</a>



## 29. Laboratory Diagnostics

The department that provides the educational component	Department of Clinical Laboratory Diagnostics
Abstract of the educational component	The introduction of laboratory diagnostics into the pedagogical process is connected with the need to teach students of higher education a certain amount of knowledge about the logical justification of laboratory diagnosis, as well as to distinguish typical changes in the results of clinical and laboratory tests of blood, urine, feces, sputum, gastrointestinal contents under the influence of various medicines.
Level of higher education	second (masters) level
Course, semester	III course, 6 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1-11IWYG2hs4Si-7njfES1q0m4YfUmNVT/view">https://drive.google.com/file/d/1-11IWYG2hs4Si-7njfES1q0m4YfUmNVT/view</a>
Presentation of the educational component	<a href="https://drive.google.com/file/d/1PXp2RZ6toHE25NnSbB8ygQFIDjkJpL2l/view">https://drive.google.com/file/d/1PXp2RZ6toHE25NnSbB8ygQFIDjkJpL2l/view</a>

### 30. Tropical Infections

The department that provides the educational component	Department of Microbiology, Virology and Immunology
Abstract of the educational component	The introduction of the educational component "Tropical infections" is associated with the need to train specialists who have a significant amount of theoretical and practical knowledge on the main aspects of infectious pathology in tropical climates, the development of clinical thinking, the ability to practically apply the acquired knowledge. The specialist must know how to rationally use instrumental and laboratory research methods aimed at early detection of patients, master the methods of rational therapy, the principles of emergency therapy, acquire skills in primary anti-epidemic measures, and be professionally knowledgeable to inspire trust in patients.
Level of higher education	second (masters) level
Course, semester	III course, 6 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1znebrBbW8we7IP-UrK79vM54PLnV9JHJ/view?usp=drive_link">https://drive.google.com/file/d/1znebrBbW8we7IP-UrK79vM54PLnV9JHJ/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://microbiology.nuph.edu.ua/wp-content/uploads/2023/08/vd_tropical-infections-selected-disciplines.pdf">https://microbiology.nuph.edu.ua/wp-content/uploads/2023/08/vd_tropical-infections-selected-disciplines.pdf</a>

### 31. Epidemiology of Diseases

The department that provides the educational component	Department of Microbiology, Virology and Immunology
Abstract of the educational component	The introduction of the educational component "Epidemiology of Diseases" is associated with the need to train specialists who have a significant amount of theoretical knowledge, skills and practical skills with an in-depth study of the role of biological and socio-economic factors in the development of the epidemic process; methods of epidemiological research, to be guided in the legal issues of organizing preventive and anti-epidemic measures. The specialist is obliged to know the basis of the organization of preventive and anti-epidemic activities in the field of practical medicine, which will allow to assess the quality and reliability of the results of preventive and anti-epidemic measures with high reliability.
Level of higher education	second (masters) level
Course, semester	III course, 6 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1AKWyj7yfx9rhjc8AlxBsSD2kYlfY0-0a/view?usp=drive_link">https://drive.google.com/file/d/1AKWyj7yfx9rhjc8AlxBsSD2kYlfY0-0a/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://microbiology.nuph.edu.ua/wp-content/uploads/2023/08/vd_epidemiology-of-diseases.pdf">https://microbiology.nuph.edu.ua/wp-content/uploads/2023/08/vd_epidemiology-of-diseases.pdf</a>

### 32. Pathological Physiology of Diseases of Civilization

The department that provides the educational component	Department of Normal and pathological physiology
Abstract of the educational component	The introduction of the Pathological Physiology of Diseases of Civilization into the educational process is associated with the need to form a holistic body of knowledge about "diseases of civilization" caused by the action of anthropogenic, technogenic, environmental, behavioral factors that affect human health, cause certain pathological processes or affect their course, the principles of diagnosis, treatment and prevention of diseases. The specialist is obliged to evaluate information on etiopathogenetic factors of the development of diseases of civilization, identify early signs of diseases, side effects of medicines, and justify the directions of drug development.
Level of higher education	Second (masters) level
Course, semester	III course, 6 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1LKLcBq7e7il2YS9x8bxXuDHgBCqoqiUI/view?usp=drive_link">https://drive.google.com/file/d/1LKLcBq7e7il2YS9x8bxXuDHgBCqoqiUI/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://pat.nuph.edu.ua/wp-content/uploads/2023/08/vybirkova-ok_pathological-physiology-of-diseases-of-civilization.pdf">https://pat.nuph.edu.ua/wp-content/uploads/2023/08/vybirkova-ok_pathological-physiology-of-diseases-of-civilization.pdf</a>

### 33. Pharmaceutical Bromatology

The department that provides the educational component	Department of Pharmaceutical chemistry
Abstract of the educational component	The educational component "Pharmaceutical bromatology" provides basic knowledge about the main chemical characteristics of food products, studies aspects of the interaction of drugs and food products, as well as the use of rational nutrition in the treatment of various diseases. It studies the main types of food adulteration that can negatively affect human health. The acquired knowledge makes it possible to carry out qualified pharmaceutical care, to take into account the risks of irrational use of medicines together with food and drinks.
Level of higher education	second (masters) level
Course, semester	III course, 6 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1xX1JimN0yjXZFxc1Y_Pft2dXi7A3BZHS/view?usp=drive_link">https://drive.google.com/file/d/1xX1JimN0yjXZFxc1Y_Pft2dXi7A3BZHS/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://drive.google.com/file/d/1rz096hvtE4-hwAeSqZc2tA4alOivYeY2/view?usp=drive_link">https://drive.google.com/file/d/1rz096hvtE4-hwAeSqZc2tA4alOivYeY2/view?usp=drive_link</a>

### 34. Nutrition

The department that provides the educational component	Department of Pharmacognosy and Nutriciology
Abstract of the educational component	The introduction of Nutriciology into the educational process is connected with the need to train future specialists on the issues of a scientifically based system of using food additives for special purposes - especially biologically active ones, which are allowed to be sold in pharmacies. The specialist is obliged to inform and warn the population that only those food additives that are allowed in Ukraine can be used, must closely monitor the appearance of new registered products, be professionally knowledgeable in order to inspire trust among patients.
Level of higher education	second (masters) level
Course, semester	III course, 6 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1o7meVmx1Xhq_YmSR7ZTk2DLfMJCWKy9W/view?usp=drive_link">https://drive.google.com/file/d/1o7meVmx1Xhq_YmSR7ZTk2DLfMJCWKy9W/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://drive.google.com/file/d/1gICtm4OteK36fU7ZstSuh7Pwv7DHH-dD/view?usp=drive_link">https://drive.google.com/file/d/1gICtm4OteK36fU7ZstSuh7Pwv7DHH-dD/view?usp=drive_link</a>

### 35. Medical and Analytical Toxicology

The department that provides the educational component	Department of Medicinal Chemistry
Abstract of the educational component	Medical and Analytical Toxicology is a compulsory, professionally oriented, complex discipline in the system of higher pharmaceutical education. The discipline forms the competencies as in medical toxicology as in analytical toxicology, specifically promotes the development of skills in the field of Forensic and Clinical Toxicology, diagnostics of drug abuse and alcoholism Ecotoxicology. The discipline gives the methodical basis for preparation of pharmacists specializing in the fields of biopharmacy, pharmaco- and toxicokinetics, clinical pharmacy. The knowledge of the poisonous substance metabolism, mechanism of toxicity, methods of determination of toxicants in biological samples is necessary for searching the safe biologically active substances, medicines for effective specific antidote therapy, to carry out toxicological diagnostics of fatal poisonings and toxicological analysis of biological fluids for the presence of psychotic and narcotic substances for the differentiation of narcotic intoxication.
Level of higher education	second (masters) level
Course, semester	IV course, 7 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1vYUbbie48yMcDjEKyDrsVRtTh7HUc8Y6/view?usp=drive_link">https://drive.google.com/file/d/1vYUbbie48yMcDjEKyDrsVRtTh7HUc8Y6/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://drive.google.com/file/d/1hfxkyvEtQXnT7qweC4exLDX86XP6Oi8u/view?usp=drive_link">https://drive.google.com/file/d/1hfxkyvEtQXnT7qweC4exLDX86XP6Oi8u/view?usp=drive_link</a>

### 36. Toxicological Chemistry

The department that provides the educational component	Department of Medicinal Chemistry
Abstract of the educational component	Toxicological Chemistry is a professionally oriented, complex discipline in the system of higher pharmaceutical education. Toxicological Chemistry deals with chemical nature and reactions of toxic substances; their origin and uses; and the chemical aspects of their exposure, transformation, and elimination of biological systems. It emphasized the chemical formulas, structure, and reactions of toxic substances The discipline forms the basis of expert thinking, promotes the development of skills in the field of Forensic and Clinical Toxicology (the Forensic-Toxicological Laboratory of Bureau of forensic-medical examinations, the Emergency Centre for acutely poisoned patients, the Industrial Sanitary Laboratory which performs industrial and ecological supervision, the Toxicological Laboratory for Diagnostics of drug abuse and alcoholism).
Level of higher education	second (masters) level
Course, semester	IV course, 7 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1pjuFrntbFzVPzr_1ILn_y2wlmjCiW8n2/view?usp=drive_link">https://drive.google.com/file/d/1pjuFrntbFzVPzr_1ILn_y2wlmjCiW8n2/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://drive.google.com/file/d/10M3hAZzH_fZJbCBf3I1CYjcfz-gQ8Sv/view?usp=drive_link">https://drive.google.com/file/d/10M3hAZzH_fZJbCBf3I1CYjcfz-gQ8Sv/view?usp=drive_link</a>



### 37. Technology of Homeopathic Medicines

The department that provides the educational component	Department of Pharmaceutical Technology of Drugs
Abstract of the educational component	The introduction of the Technology of Homeopathic Medicines products into the educational process is connected with the need to train future specialists in the areas of deepening professional knowledge and familiarization with the theoretical and practical bases of the technology of homeopathic medicinal products in pharmacy conditions, quality control, rules for registration before dispensing, storage conditions and features of use by patients
Level of higher education	second (masters) level
Course, semester	IV course, 7 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1zTHpX9ZTcMt9b3xvKWap4cf4OcvX5BzY/view?usp=drive_link">https://drive.google.com/file/d/1zTHpX9ZTcMt9b3xvKWap4cf4OcvX5BzY/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://atl.nuph.edu.ua/wp-content/uploads/2023/08/technology-of-homeopathic-medicines.pdf">https://atl.nuph.edu.ua/wp-content/uploads/2023/08/technology-of-homeopathic-medicines.pdf</a>

### 38. Technology of Veterinary Preparations

The department that provides the educational component	Department of Pharmaceutical technology of drugs
Abstract of the educational component	The introduction of the Technology of veterinary preparations into the educational process is related to the need to train future specialists on the state of the market of veterinary drugs and animal protection products in Ukraine and the provision of veterinary drugs in specialized medical hospital. The specialist is obliged to orient himself in the nomenclature of domestic and foreign veterinary drugs, learn the basic concepts and terms of veterinary medicine and veterinary pharmacy; directions of state regulation of production and sale of veterinary drugs; learn the structure of the prescription and registration dossier for veterinary drugs; principles of dosage of medicines in veterinary practice; learn the theoretical foundations of pharmacy and industrial technology of various medicinal forms used in veterinary medicine; to master the implementation of continuous control of veterinary drugs and means of animal protection.
Level of higher education	second (masters) level
Course, semester	IV course, 7 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/13Ci3uK4GL7RVIKtUAjTi2vZLaXQTdL_T/view?usp=drive_link">https://drive.google.com/file/d/13Ci3uK4GL7RVIKtUAjTi2vZLaXQTdL_T/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://atl.nuph.edu.ua/wp-content/uploads/2023/08/technology-of-veterinary-preparation-specialty-226-pharmacy-and-industrial-pharmacy-for-foreign-students-studying-in-english.pdf">https://atl.nuph.edu.ua/wp-content/uploads/2023/08/technology-of-veterinary-preparation-specialty-226-pharmacy-and-industrial-pharmacy-for-foreign-students-studying-in-english.pdf</a>

### 39. Pharmacognostic Basics of Phytotherapy

The department that provides the educational component	Department of Pharmacognosy and Nutriciology
Abstract of the educational component	The pharmacognostic basis of phytotherapy as an educational component provides knowledge, skills and abilities on the basic principles of phytotherapy, medicinal plants of traditional medicine used to treat the most common diseases: cardiovascular system, gastrointestinal tract and liver, genitourinary system and kidneys, and used in aromalogy, phytotherapy , diet therapy, dermatology and cosmetics. In modern clinical medicine, the role of phytotherapy as a complementary (reinforcing, supplementing) method is progressively growing. This is caused, first of all, by the insignificant toxicity and biological safety for the body of most herbal remedies, as well as the specific features of their activity: a significant breadth of the therapeutic spectrum, the gradual increase of the clinical and pharmacological effect, the complexity of the effect on various mechanisms of the pathological process, relatively infrequent manifestations of negative, in particular, allergic reactions even in conditions of their long-term use. These features determine the role of phytotherapy and its means in the long-term outpatient treatment of patients with chronic diseases, at the stage of post-hospital restorative treatment, as well as in sanatorium-resort conditions. The program is designed to enable students of higher education not only to learn the main theoretical aspects of phytotherapy, but also to acquire practical skills in its use in complex treatment at various stages of the pathological process, as well as in the rehabilitation of patients.
Level of higher education	second (masters) level
Course, semester	IV course, 7 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1ubP8RxnYwRm2HoofQrjovR-XGPJMjCKs/view?usp=drive_link">https://drive.google.com/file/d/1ubP8RxnYwRm2HoofQrjovR-XGPJMjCKs/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://drive.google.com/file/d/1Rdieed41klmO2HhIICJ-Es6WjPctfmAK/view?usp=drive_link">https://drive.google.com/file/d/1Rdieed41klmO2HhIICJ-Es6WjPctfmAK/view?usp=drive_link</a>

#### 40. Side Effects of Drugs

The department that provides the educational component	Department of Pharmacology and Pharmacotherapy
Abstract of the educational component	Studying "Side effects of drugs" allows you to form and deepen the professional and competent knowledge of students regarding the side effects and contraindications of modern drugs, familiarize pharmacists with the methodology of choosing the most effective and safe drugs in order to avoid unwanted reactions to drugs. "Side effects of drugs" helps students to form a system of theoretical knowledge on the basics of the side effects of drugs; consolidation of the basic principles of pharmacological safety of medicinal products; familiarization with the basic principles of the formulary system: national treatment recommendations, rational combinations of medicinal products; familiarization with the general administration of drugs.
Level of higher education	second (masters) level
Course, semester	IV course, 7 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1MB4PvZ_O4Ccw_MqKr-kVAnL1xiHkQGmf/view?usp=drive_link">https://drive.google.com/file/d/1MB4PvZ_O4Ccw_MqKr-kVAnL1xiHkQGmf/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://pharmacolpharmacother.nuph.edu.ua/wp-content/uploads/2023/09/Side-effects-of-drugs-2023.pdf">https://pharmacolpharmacother.nuph.edu.ua/wp-content/uploads/2023/09/Side-effects-of-drugs-2023.pdf</a>

#### 41. Modern Methods of Biological Systems Research

The department that provides the educational component	Department of Biological Chemistry and Veterinary Medicine.
Abstract of the educational component	Educational component «Modern Methods of Biological Systems Research» involves familiarization with the general characteristics of modern methods of research of biological systems, as well as the creation of students of higher education a holistic idea of the modern possibilities of diagnosis of common diseases, which can be applied in solving various problems of the professional activity of pharmacy specialists. The knowledge obtained from modern methods of biosystems research can be used in the practical activities of specialists in the pharmaceutical industry for the purpose of providing patients with consultations regarding the prevention of diseases and the possibilities of diagnosis to prevent their further occurrence.
Level of higher education	second (masters) level
Course, semester	IV course, 7 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1M26p9C12jcpBBVoj8NHb1jrNW0WdpZTB/view?usp=drive_link">https://drive.google.com/file/d/1M26p9C12jcpBBVoj8NHb1jrNW0WdpZTB/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://biochem.nuph.edu.ua/wp-content/uploads/2023/08/modern-methods-of-biological-systems-research-4-k-1.pdf">https://biochem.nuph.edu.ua/wp-content/uploads/2023/08/modern-methods-of-biological-systems-research-4-k-1.pdf</a>

## 42. Pharmacogenetics

The department that provides the educational component	Department of Normal and pathological physiology
Abstract of the educational component	The introduction of pharmacogenetics into the educational process is associated with the need to train future specialists in the knowledge of the main pathways of drug metabolism in the human body and changes in pharmacological response depending on the patient's genetic individuality. The specialist is obliged to predict the effectiveness of treatment tactics depending on the person's genotype and the toxic effects of drugs in certain genotypes.
Level of higher education	Second (masters) level
Course, semester	4 course, 7 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1TG2nDPIUvRbIqka5pzSD_sv28vGXEPt/view?usp=drive_link">https://drive.google.com/file/d/1TG2nDPIUvRbIqka5pzSD_sv28vGXEPt/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://pat.nuph.edu.ua/wp-content/uploads/2023/08/vybirkova-ok_pharmacogenetics.pdf">https://pat.nuph.edu.ua/wp-content/uploads/2023/08/vybirkova-ok_pharmacogenetics.pdf</a>

### 43. Current Issues of Drug Addiction and Toxic Addiction

The department that provides the educational component	Department of Medicinal Chemistry
Abstract of the educational component	Current Issues of Drug Addiction and Toxic Addiction is an optional educational component. It combines the training of a pharmacy specialist in the diagnosis of alcohol and drug intoxication, as well as the provision of first aid and prevention of these diseases. This educational component is closely related to everyday life because the problem of the spread of alcoholism, drug addiction and toxic addiction is relevant and needs to be informed. The educational component «Current Issues of Drug Addiction and Toxic Addiction» contributes to the formation of positive thinking about a healthy lifestyle, skills in differentiating alcohol or drug intoxication in applicants of higher education, encourages the use of methods of prevention of alcoholism, drug addiction and drug addiction in the immediate environment.
Level of higher education	second (masters) level
Course, semester	IV course, 7 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1j65k9-71SP689yZlZsfXO06eqAK2YuOS/view?usp=drive_link">https://drive.google.com/file/d/1j65k9-71SP689yZlZsfXO06eqAK2YuOS/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://drive.google.com/file/d/1frbNxxv8PbtD95vmW0ZV3-vu9wWWrFq5/view?usp=drive_link">https://drive.google.com/file/d/1frbNxxv8PbtD95vmW0ZV3-vu9wWWrFq5/view?usp=drive_link</a>

#### 44. Pharmaceutical Biotechnology

The department that provides the educational component	Biotechnology department
Abstract of the educational component	The educational component lays the foundations of professional training, contributes to the formation of pharmaceutical thinking, necessary for the pharmaceutical specialty. Together with other pharmaceutical educational components and social sciences, pharmaceutical biotechnology plays an important role in providing special technological training for professional activities.
Level of higher education	second (masters) level
Course, semester	IV course, 8 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/13bTTwCnaFREkb5QCdThfp8LHVialLcBe/view?usp=drive_link">https://drive.google.com/file/d/13bTTwCnaFREkb5QCdThfp8LHVialLcBe/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://biotech.nuph.edu.ua/wp-content/uploads/2023/08/pharmbt_prezentatsiia.pdf">https://biotech.nuph.edu.ua/wp-content/uploads/2023/08/pharmbt_prezentatsiia.pdf</a>



#### 45. Technologies of Microbial Synthesis of Drugs

The department that provides the educational component	Biotechnology department
Abstract of the educational component	The educational component contributes to the assimilation of the biochemical, physicochemical, physical and microbiological foundations of modern biotechnological productions, methods of implementing bioprocesses (biosynthesis, biotransformation, etc.) knowledge in the process of further education and professional activity; the educational component lays the foundations of professional training, contributes to the formation of pharmaceutical thinking, necessary for the pharmaceutical specialty; together with other pharmaceutical educational components and social sciences, the educational component "Technology of microbial synthesis of medicinal products" plays an important role in providing special technological training for the implementation of professional activities.
Level of higher education	second (masters) level
Course, semester	IV course, 8 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1-v3_VaSClzJH1glaPraiUZWXBmXL39_J/view?usp=drive_link">https://drive.google.com/file/d/1-v3_VaSClzJH1glaPraiUZWXBmXL39_J/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://biotech.nuph.edu.ua/wp-content/uploads/2023/08/prezentatsiia.pdf">https://biotech.nuph.edu.ua/wp-content/uploads/2023/08/prezentatsiia.pdf</a>

#### 46. Technology of cosmetics

The department that provides the educational component	Department of Cosmetology and Aromology
Abstract of the educational component	The introduction of the Technology of cosmetic products into the educational process is connected with the need to train future specialists, which consists in mastering the main provisions, including the issues of state regulation of the production and sale of perfumery and cosmetic products and the main approaches to the analysis of the recipes of cosmetic preparations that reveal hygienic, preventive and decorative operation, study of the market of cosmetic products, preparation of recipes and substantiation of the rational technology of manufacturing and quality control of cosmetic preparations in accordance with the requirements of regulatory and technical documentation.
Level of higher education	Second (master's) level
Course, semester	IV course, 8 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1W4379CymRn42EXCiiRTMRykZnkpSZJpk/view?usp=drive_link">https://drive.google.com/file/d/1W4379CymRn42EXCiiRTMRykZnkpSZJpk/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://drive.google.com/file/d/1PmHYMDCozKuWnu9wcudF93t0zpwW0jo9/view?usp=drive_link">https://drive.google.com/file/d/1PmHYMDCozKuWnu9wcudF93t0zpwW0jo9/view?usp=drive_link</a>

#### 47. Pharmacy-sold cosmetic products

The department that provides the educational component	Department of Cosmetology and Aromology
Abstract of the educational component	The introduction of the educational component "Pharmacy-sold cosmetic products" into the educational process is related to the integration of knowledge about the pharmacy-sold cosmetic products and the concept of skin care, taking into account the various conditions of the skin and its appendages, into the educational process in the context of the modernization of the educational system of Ukraine. Students of higher education gain knowledge about the algorithm of selection of cosmetic products (of general use and with targeted cosmetology effect) for the care of the skin and its appendages depending on the type of skin and other features of the skin condition; knowledge of the principles of formulation of cosmetic products depending on the target profile; knowledge about the assortment of active and auxiliary substances in cosmetic products; knowledge about the modern strategy of problem skin care (acne, seborrhea, atopic dermatitis, psoriasis, etc.).
Level of higher education	Second (master's) level
Course, semester	IV course, 8th semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1d6wL2CUgmEA7zAuV8qVJJ7PqN8Rdyiob/view?usp=drive_link">https://drive.google.com/file/d/1d6wL2CUgmEA7zAuV8qVJJ7PqN8Rdyiob/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://drive.google.com/file/d/1Rcjdkm6dZ-0aCaiQTihJ3KnOxtD4ai9Z/view?usp=drive_link">https://drive.google.com/file/d/1Rcjdkm6dZ-0aCaiQTihJ3KnOxtD4ai9Z/view?usp=drive_link</a>

#### 48. Pharmacognostic Analysis of New Medicinal Herbal Raw Material

The department that provides the educational component	Department of Pharmacognosy and Nutriciology
Abstract of the educational component	Pharmacognostic analysis of new MPRM is a highly specialized applied science that studies the biological, biochemical and medicinal properties of plants, natural raw materials and products from them; provides knowledge, skills and abilities in the identification of medicinal plants (ML), determination of stocks, procurement, storage and analysis of medicinal plant raw materials, as well as individual products of plant and animal origin. The educational component is based on the chemical classification of medicinal plants, introduces higher education students to the ways of biosynthesis of medicinal plants, the patterns of distribution of medicinal plants in nature, the peculiarities of the exploitation of medicinal plant thickets, the organization of their protection and reproduction in natural conditions. The sequence of teaching the course of pharmacognosy with the basics of resource science corresponds to the sequence of biochemical processes in the plant organism, takes into account the biogenetic features of different groups of BAR. First, LR and medicinal plant raw materials (MPRM), which contain primary metabolites (carbohydrates, lipids, peptides and proteins), are considered, then - compounds of secondary biosynthesis, formed through mevalonic acid or the shikimate pathway, etc. When studying in a laboratory session, preference is given to classic objects of pharmacognosy and raw materials that are harvested and processed in Ukraine.
Level of higher education	second (masters) level
Course, semester	V course, 9 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1wTF8Vy0gQyR_lkw-0KUOKG2qAQL6muPY/view?usp=drive_link">https://drive.google.com/file/d/1wTF8Vy0gQyR_lkw-0KUOKG2qAQL6muPY/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://drive.google.com/file/d/1lz6kWamCnG_wW2hTryPnqNROxzYYqEYa/view?usp=drive_link">https://drive.google.com/file/d/1lz6kWamCnG_wW2hTryPnqNROxzYYqEYa/view?usp=drive_link</a>

### 49. Biopharmacy

The department that provides the educational component	Departments of Pharmaceutical technology of drugs
Abstract of the educational component	The introduction of the Biopharmacy into the educational process is related to the need to train future specialists to learn the theoretical bases of biopharmacy; to classify and distinguish exogenous, endogenous, pharmaceutical, biological and other factors, master biopharmaceutical methods of in vitro and in vivo studies, to master techniques that allow to control the influence of the nature, physical state of medicinal and auxiliary substances, simple chemical modification, type of dosage form, route of its introduction and production processes on pharmacodynamics, pharmacokinetics and biological availability of medicinal substances, to formulate in higher education students practical skills that are necessary for bio-pharmaceutical research.
Level of higher education	second (masters) level
Course, semester	V course, 9 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/161hEZcgUfUIDO7AYb-BgtlPoZPVVfII_/view">https://drive.google.com/file/d/161hEZcgUfUIDO7AYb-BgtlPoZPVVfII_/view</a>
Presentation of the educational component	<a href="https://atl.nuph.edu.ua/wp-content/uploads/2023/08/biopharmacy_specialty-226-pharmacy-industrial-pharmacy-for-foreign-students-studying-in-english.pdf">https://atl.nuph.edu.ua/wp-content/uploads/2023/08/biopharmacy_specialty-226-pharmacy-industrial-pharmacy-for-foreign-students-studying-in-english.pdf</a>

### 50. Drug Standardization

The department that provides the educational component	Department of Pharmaceutical chemistry
Abstract of the educational component	The subject of study of the educational component “Drug standardization” is seen as an important economic and political task in improving production. Regulatory and technical documentation becomes the norm of socially necessary requirements for the quality of all types of products. It is especially important in relation to medicines, as the latter are designed to ensure the safety and effectiveness of these products for human health. Accordingly, the standardization of medicines as educational component prepares specialists to address such important issues as the development of quality standards for medicines that ensure the appropriate level of quality of medicines.
Level of higher education	second (masters) level
Course, semester	V course, 9 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1jUnSYb6KWgpfV0X_4HAUxSKj6GHGgFPJ/view?usp=drive_link">https://drive.google.com/file/d/1jUnSYb6KWgpfV0X_4HAUxSKj6GHGgFPJ/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://drive.google.com/file/d/1piGbJ3P6pXMOyn7NbleOU40kJKx-gocU/view?usp=drive_link">https://drive.google.com/file/d/1piGbJ3P6pXMOyn7NbleOU40kJKx-gocU/view?usp=drive_link</a>

### 51. Assessment of Health Care Technologies

The department that provides the educational component	Organization and economics of pharmacy Department
Abstract of the educational component	The introduction of health technology assessment (HTA) into the educational process is due to the need to train future specialists in the issues of a scientifically based system for assessing the effectiveness and feasibility of using various medical technologies (including medicines). Currently, HTA is actively used to select the most effective medicines for inclusion in the National List, the Medical Guarantee Program and the procurement nomenclature.
Level of higher education	second (masters) level
Course, semester	V course, 9 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1IibESNMVglkbfahb8wctXvknRykXhtLs/view?usp=drive_link">https://drive.google.com/file/d/1IibESNMVglkbfahb8wctXvknRykXhtLs/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://economica.nuph.edu.ua/wp-content/uploads/2023/08/otoz_farmatsiia_mahistr-anhl-1.pdf">https://economica.nuph.edu.ua/wp-content/uploads/2023/08/otoz_farmatsiia_mahistr-anhl-1.pdf</a>

## 52. Systemic Analysis of Health Institutions

The department that provides the educational component	Organization and economics of pharmacy Department
Abstract of the educational component	The implementation of the Systemic Analysis of Health Institutions in the educational process is aimed at the need to form future specialists' knowledge regarding the planning of the main economic indicators of the functioning of pharmacy institutions. The specialist must analyze the main economic indicators of the pharmaceutical industry's business entities using methods of system analysis (recipe, turnover, trade overlays, costs, profit, profitability).
Level of higher education	second (masters) level
Course, semester	V course, 9 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1Nt5xV97wJ8j2uPwBqfIglEbSN69zGXBn/view?usp=drive_link">https://drive.google.com/file/d/1Nt5xV97wJ8j2uPwBqfIglEbSN69zGXBn/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://economica.nuph.edu.ua/wp-content/uploads/2023/08/rresentation-systemic-analysis-of-health-institutions-pharmacy.pdf">https://economica.nuph.edu.ua/wp-content/uploads/2023/08/rresentation-systemic-analysis-of-health-institutions-pharmacy.pdf</a>



### 53. Basics of Rational Nutrition

The department that provides the educational component	Department of Pharmacognosy and Nutriciology
Abstract of the educational component	Basics of rational nutrition - a selective educational component for students of higher education, specialty 226 "Pharmacy, industrial pharmacy". The educational process is organized according to the credit-module system. The program of the discipline meets the requirements of the "Recommendations for the development of educational programs of educational disciplines" (Order of the Ministry of Health of Ukraine No. 492 dated 12.10.2004). The amount of study load of students of higher education is described in ECTS credits – credit credits, which are credited to students of higher education upon successful assimilation of the relevant part of the discipline. The selective educational component "Fundamentals of rational nutrition" contains a complex of information necessary for the expansion of theoretical training and practical activities of the future specialist, allows to teach the correct attitude to nutrition and health, reveals the importance and role of nutrition in the life processes of the human body.
Level of higher education	second (masters) level
Course, semester	V course, 9 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1SmoXka0Hnk64LUQ3JAmSOG-gTGAszabB/view?usp=drive_link">https://drive.google.com/file/d/1SmoXka0Hnk64LUQ3JAmSOG-gTGAszabB/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://drive.google.com/file/d/1iFN2ioDyuFwgxeX_pwlQvWKUvWbI1CI2/view?usp=drive_link">https://drive.google.com/file/d/1iFN2ioDyuFwgxeX_pwlQvWKUvWbI1CI2/view?usp=drive_link</a>

#### 54. Pharmacoeconomics

The department that provides the educational component	Department of Pharmaceutical Management and Marketing
Abstract of the educational component	Pharmacoeconomics provides a methodology for comparative assessment of various medical technologies (methods of diagnosis, treatment and prevention of various diseases) based on a simultaneous complex interrelated analysis of the clinical results obtained and the costs of using these technologies. The main essence of pharmacoeconomics is made up of methodological approaches that allow analyzing the efficiency of expenditures in the field of health care with the aim of rational spending money both for an individual consumer and for the state as a whole. The results of pharmacoeconomic research today can be used in the practice of all participants in the pharmaceutical market: drug manufacturers, pharmaceutical companies, pharmacists and doctors. In this regard, the acquisition of theoretical knowledge in pharmacoeconomics and mastery of the methodology of pharmacoeconomic analysis will allow future specialists working in the field of pharmacy not only to successfully solve various professional problems, but will also contribute to the optimal use of budgetary funds allocated for medical care to the population of the country, increase the level public health, increasing the life expectancy of the population, improving its quality, maintaining the health of the nation.
Level of higher education	second (masters) level
Course, semester	V course, 9 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1r9QBnLsPSMxU4oInAVuVxwK9VgD0QIbF/view?usp=drive_link">https://drive.google.com/file/d/1r9QBnLsPSMxU4oInAVuVxwK9VgD0QIbF/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://mmf.nuph.edu.ua/wp-content/uploads/2023/09/31-presentation-pharmacoeconomics-1.pdf">https://mmf.nuph.edu.ua/wp-content/uploads/2023/09/31-presentation-pharmacoeconomics-1.pdf</a>

### 55. Good Pharmaceutical Practices

The department that provides the educational component	Department of Management and Quality Assurance in Pharmacy
Abstract of the educational component	The discipline is elective in the master's program in 226 Pharmacy, industrial pharmacy. The subject of the discipline is the study of general principles of good practice in pharmacy, the requirements of which are used to ensure the quality of drugs during the stages of their life cycle, from development to implementation (good laboratory practice GLP, good clinical practice GCP, good manufacturing practice GMP), good distribution practice (GDP), good pharmaceutical practice (GPP), etc.).
Level of higher education	second (masters) level
Course, semester	V course, 9 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/15f1tmJlSpMfA-llLqxdJtO6rz2j-DhwF/view?usp=drive_link">https://drive.google.com/file/d/15f1tmJlSpMfA-llLqxdJtO6rz2j-DhwF/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://drive.google.com/file/d/10TVWlQnHwOfY_qdaFJGYjXnyiw7Wggvl/view?usp=drive_link">https://drive.google.com/file/d/10TVWlQnHwOfY_qdaFJGYjXnyiw7Wggvl/view?usp=drive_link</a>

### 56. Quality Systems in Pharmacy

The department that provides the educational component	Department of Management and Quality Assurance in Pharmacy
Abstract of the educational component	The discipline is elective in the master's program in 226 Pharmacy, industrial pharmacy. The subjects of study in the discipline "Quality Systems in Pharmacy" are quality management systems in pharmacy, approaches to its operation, and regulation of pharmaceutical companies.
Level of higher education	second (masters) level
Course, semester	V course, 9 semester
Syllabus of the educational component	<a href="https://drive.google.com/file/d/1_IDYUxKTVX6ZGEAz69QBUmPYTFErXnZH/view?usp=drive_link">https://drive.google.com/file/d/1_IDYUxKTVX6ZGEAz69QBUmPYTFErXnZH/view?usp=drive_link</a>
Presentation of the educational component	<a href="https://drive.google.com/file/d/15xRJDPKm-m8yfaiaZlbimSOr5OZxKa9_/view?usp=drive_link">https://drive.google.com/file/d/15xRJDPKm-m8yfaiaZlbimSOr5OZxKa9_/view?usp=drive_link</a>