

NATIONAL PIROGOV MEMORIAL MEDICAL UNIVERSITY, VINNYTSIA



COURSE SYLLABUS

Academic discipline for Master's degree training: **PERSONALIZED PHARMACY AND COSMETOLOGY**

Specialty	226 Pharmacy, Industrial Pharmacy
Specialisation	226.01 Фармація
Educational Programme	EPP “Pharmacy” (2023)
Higher Education Level	Second (Master's)
Academic Year	2026-2027
Status of the Discipline	Compulsory
Language of Instruction	Ukrainian, English
Total Workload	3.0 ECTS credits
Year of Study / Semester	III / 6
Course Developer	H. Kramar, Associate Professor, Candidate of Pharmaceutical Sciences
Instructor(s)	O. Kryvoviaz, Professor, Doctor of Pharmaceutical Sciences; Yu. Tomashevskaya, Associate Professor, Candidate of Pharmaceutical Sciences; O. Toziuk, Associate Professor, Candidate of Pharmaceutical Sciences; H. Kramar, Associate Professor, Candidate of Pharmaceutical Sciences
Venue and Contact Details	pharmacy@vnmu.edu.ua , м.Вінниця, вул. Пирогова 56, телефон 55 – 39 - 52

1. DESCRIPTION OF THE ACADEMIC DISCIPLINE

ABSTRACT

Brief course overview and relevance. The academic discipline "Personalized Pharmacy and Cosmetology" constitutes a stage in the professional training of specialists. The primary objective of the course is to ensure the successful acquisition of knowledge essential for mastering professional subjects—specifically, the organization of pharmaceutical care based on the selection of optimal medicinal products for a specific individual, taking into account their genetic, physiological, biochemical, metabolic, psychological, or other unique characteristics—as well as understanding how to apply personalized pharmacy within one's professional practice.

The subject matter of this academic discipline encompasses the current state and development prospects of the personalized approach in pharmacy and cosmetology; a detailed examination of the specifics of applying personalized medicine and pharmacy across various fields; the establishment of theoretical foundations and practical skills for developing the composition and technology of personalized medicinal and cosmetic products in various dosage forms, in compliance with regulatory requirements; and the biopharmaceutical aspects of personalized pharmacy.

Together with other pharmaceutical and social sciences, "Personalized Pharmacy and Cosmetology" plays a significant role in shaping the professional worldview of pharmacy specialists. It provides the specialized technological training necessary for their professional practice, aimed at supplying the general public and healthcare institutions with medicinal products. Furthermore, this discipline fosters practical skills regarding the historical evolution and development of the pharmaceutical sector—both in Ukraine and abroad—as well as the general requirements for the compounding and manufacturing of medicinal products. It also builds knowledge concerning the specifics of a personalized approach within pharmacy, its application across various areas of pharmaceutical and medical practice (including cosmetology), and current development trends in the fields of personalized pharmacy and cosmetology.

Prerequisites (knowledge from which disciplines is required for successful completion of this course?)

This discipline requires the following curriculum subjects as prerequisites:

- Introduction to Pharmacy (an overview of the profession and basic terminology);
- Biology with Fundamentals of Genetics (concepts regarding the cellular structure of living matter, basic knowledge of its chemical composition, and an understanding of the structural features of plant and animal cells);
- Drug Technology: Pharmacy compounding (knowledge regarding the preparation of solid, liquid, and semi-solid dosage forms within a pharmacy setting);
- Drug Technology: Industrial Drug Technology (knowledge regarding the manufacturing of solid, liquid, and semi-solid dosage forms in an industrial setting);
- Pharmaceutical Terminology and Fundamentals of Pharmaceutical Calculations (the basics of modern pharmaceutical terminology and key pharmaceutical calculations used in the technology of dosage forms);
- Excipients in Pharmaceutical and Cosmetic Technology (the properties and nomenclature of excipients used in the manufacture of medicinal products and cosmetic preparations);
- Fundamentals of Regulatory Affairs in the Pharmaceutical Industry (the legislative framework of Ukraine, as well as the requirements of normative-technical documentation regarding the manufacture, storage, and dispensing of medicinal products).

PURPOSE AND OBJECTIVES

The goal of the course and its significance for professional practice: to familiarize the higher education student with modern trends in the field—specifically personalized pharmacy and cosmetology—as well as the fundamental principles for the individualized selection of medicinal and cosmetic products, and to identify the areas of pharmaceutical science and practice where a personalized approach is most appropriate.

Competencies and learning outcomes supported by the discipline.

- *integrated:* the ability to solve tasks and to comprehend and address practical problems of a research and/or innovative nature in the field of pharmacy.

- *general:*

GC 02. Ability for abstract thinking, analysis, and synthesis.

GC 03. Knowledge and understanding of the subject area and of professional activity.

GC 04. Ability to adapt and act in new situations. Ability to show initiative.

GC 06. Skills in using information and communication technologies.

GC 07. Ability to select communication strategies; ability to work in a team and with experts from other fields of knowledge or economic sectors.

GC 11. Ability to preserve and enhance the moral, cultural, and scientific values and achievements of society, based on an understanding of the history and developmental patterns of the subject area, its place within the broader system of knowledge about nature and society, and its role in the development of society, technology, and engineering; ability to utilize various types and forms of physical activity for active leisure and the maintenance of a healthy lifestyle.

- *specialised (professional, subject-specific) competences (PC):*

PC 01. The ability to collect, interpret, and apply data necessary for professional activities, conducting research, and implementing innovative projects in the field of pharmacy.

PC 03. The ability to solve problems in the field of pharmacy within new or unfamiliar environments, given limited information, while taking into account aspects of social and ethical responsibility.

PC 04. The ability to apply knowledge of the regulatory and legislative acts of Ukraine, as well as guidelines for Good Pharmaceutical Practices, in professional activities.

PC 05. The ability to demonstrate and apply communication skills, as well as the fundamental principles of pharmaceutical ethics and deontology—grounded in moral obligations, values, ethical standards of professional conduct, and responsibility—in accordance with the Code of Ethics for Pharmaceutical Professionals of Ukraine and WHO guidelines.

PC 06. The ability to communicate one's knowledge, conclusions, and reasoning in the field of pharmacy clearly and unambiguously to both specialists and non-specialists, including learners. PC 09. The ability to provide consultation regarding prescription and non-prescription medicinal products and other pharmacy-assortment goods, as well as aspects of healthy nutrition; and to provide pharmaceutical care during the selection and dispensing of medicinal products of natural and synthetic origin. This involves evaluating the risk-benefit ratio and compatibility, taking into account their biopharmaceutical, pharmacokinetic, pharmacodynamic, and physicochemical/chemical characteristics, as well as indications and contraindications for use, while considering the specific health status of the individual patient.

PC 18. The ability to organize and carry out the compounding activities of pharmacies—specifically the preparation of medicinal products in various dosage forms based on physicians' prescriptions and orders from healthcare institutions—including justifying the technology used and selecting excipients in accordance with Good Pharmacy Practice (GPP) guidelines.

Post-requisites (how the course supports further study and professional practice).

This discipline serves as a foundation for the study of the following subjects: "Technology of Medicinal Cosmetic Products," "Therapeutic Cosmetic Products," "Clinical Pharmacy," "Pharmaceutical Care," and "Biopharmacy." The educational process involves integrating instruction with these disciplines and developing the ability to apply acquired knowledge during further studies and in professional practice.

The discipline establishes the basis for professional training and fosters the development of the technical and pharmaceutical mindset essential for the pharmaceutical profession.

2. LEARNING OUTCOMES

PLO 01. Apply specialized knowledge and skills from general and professional disciplines in professional practice.

PLO 02. Critically analyze scientific and applied issues within the field of pharmacy.

PLO 03. Evaluate and ensure the quality and effectiveness of activities within the field of pharmacy.

PLO 04. Adhere to sanitary-hygienic standards and safety requirements when performing professional duties.

PLO 05. Plan and execute professional activities in accordance with the regulatory and legal acts of Ukraine and the guidelines of Good Pharmaceutical Practices.

PLO 07. Demonstrate the ability to independently search for, analyze, and synthesize information from various sources—including professional literature, patents, and databases—evaluate such information (notably through statistical analysis), and apply the findings to solve both routine and complex specialized professional tasks, including those related to the development and manufacturing of medicinal products.

PLO 08. Develop and make effective decisions to address complex pharmaceutical challenges—both independently and through collaborative discussion—define objectives for one's own work and that of the team (taking into account societal and operational interests, the overall strategy, and existing constraints), and determine the optimal approaches to achieving these goals.

PLO 12. Contribute to the preservation of health, specifically through disease prevention and the rational prescribing and use of medicinal products. Perform professional duties conscientiously and adhere to legal regulations regarding the promotion and advertising of medicinal products. Possess psychological communication skills to establish trust and mutual understanding with colleagues, physicians, patients, and consumers.

PLO 14. Identify the advantages and disadvantages of medicinal products from various pharmacological groups, taking into account their chemical, physicochemical, biopharmaceutical, pharmacokinetic, and pharmacodynamic characteristics. Recommend non-prescription medicinal products and other pharmacy-assortment goods to consumers, while providing professional consultation and pharmaceutical care.

PLO15. Formulate, substantiate, and clearly and specifically communicate information—based on personal knowledge, professional experience, and key development trends in global pharmacy and related fields—to both professionals and non-professionals, including higher education students.

PLO16. Document instances of adverse reactions resulting from the use of medicinal products of natural or synthetic origin; evaluate factors that may influence the absorption, distribution, sequestration, metabolism, and excretion of medicinal products, considering the physiological state and individual characteristics of the human body as well as the pharmaceutical properties of the medicinal products themselves.

PLO 22. Develop technological documentation for the manufacture of medicinal products, select an appropriate manufacturing process, prepare medicinal products in various dosage forms based on physicians' prescriptions and requisitions (orders) from healthcare institutions, and prepare them for dispensing.

3. FORMS OF ORGANISATION OF THE EDUCATIONAL PROCESS AND THEIR SCOPE

Type of Learning Activity	Hours
Lectures:	10
Practical Classes:	30
Independent Study (IS):	50
Total	90

4. THEMATIC PLAN

- Topic 1. Personalised approach to the preparation of solid medicinal products.
- Topic 2. Personalised approach to the preparation of solid cosmetic products.
- Topic 3. Personalised approach to the preparation of homogeneous liquid medicinal products.
- Topic 4. Personalised approach to the preparation of heterogeneous liquid medicinal products.
- Topic 5. Personalised approach to the preparation of homogeneous liquid cosmetic products.
- Topic 6. Personalised approach to the preparation of heterogeneous liquid cosmetic products.
- Topic 7. Personalised approach to the preparation of semisolid medicinal products.
- Topic 8. Personalised approach to the preparation of suppositories.
- Topic 9. Personalised approach to the preparation of semisolid cosmetic products.
- Topic 10. Personalised approach to the preparation of creams.
- Topic 11. Personalised pharmacy for paediatric patients.
- Topic 12. Confectionery dosage forms.
- Topic 13. Personalised approach to the preparation of solid medicinal products.
- Topic 14. Personalised approach to the preparation of solid cosmetic products.

5. FORMS AND METHODS OF ASSESSMENT OF LEARNING OUTCOMES

Ongoing Assessment during Practical Classes	Methods: oral and/or written assessment and testing, computer-based assessment and testing, and completion of situational tasks.
Final examination of the discipline – credit	It is conducted during the final practical class and is determined based on current academic performance, in accordance with the "Regulations on the Organization of the Educational Process at VNMU named after M.I. Pirogov" https://vnmua.edu.ua/General Information/Key Documents or https://www.vnmua.edu.ua/downloads/other/polog_organiz_ocv_proc(2026).pdf
Assessment Tools for Learning Achievement	Theoretical questions, tests, clinically oriented situational tasks, practical assignments, demonstration of practical skills.

6. ASSESSMENT CRITERIA

Assessment of students' knowledge is carried out in accordance with the current Regulations on the Organisation of the Educational Process at National Pirogov Memorial Medical University, Vinnytsia. ([https://www.vnmu.edu.ua/downloads/other/polog_organiz_ocv_proc\(2026\).pdf](https://www.vnmu.edu.ua/downloads/other/polog_organiz_ocv_proc(2026).pdf))

Type of Assessment	Assessment Criteria / Scale
Ongoing Assessment	According to the traditional grading scale: 5 – “Excellent”, 4 – “Good”, 3 – “Satisfactory”, 2 – “Unsatisfactory”
Interim Assessments	According to the traditional grading scale
Overall Assessment for the Academic Discipline	Based on a 200-point scale (the arithmetic mean grade for the semester is converted into points), including individual work—from 1 to 12 points Passed: 122–200 points Failed: fewer than 122 points

Course grading scale: national and ECTS

Сума балів за всі види навчальної діяльності	Оцінка ECTS	Оцінка за національною шкалою	
		для екзамену, курсового проекту (роботи), практики	для заліку
180-200	A	Excellent	зараховано
170-179,99	B	Good	
160-169,99	C		
141-159,99	D	Satisfactory	
122-140,99	E	Satisfactory	
0-121,99	FX	неSatisfactory з можливістю повторного складання	не зараховано з можливістю повторного складання
	F	неSatisfactory з обов'язковим повторним вивченням дисципліни	не зараховано з обов'язковим повторним вивченням дисципліни

Criteria for Assessing Students' Knowledge

Assessment of Oral/Written Responses during Ongoing Assessment

The grade “Excellent” is awarded when a student demonstrates comprehensive knowledge of the topic, illustrating responses with a variety of relevant examples; provides complete, accurate, and clear answers without prompting or leading questions; presents the material without errors or inaccuracies; confidently solves problems and completes practical tasks of varying levels of complexity; and independently generates innovative ideas.

The grade “Good” is awarded when a student demonstrates good knowledge and understanding of the topic and provides correct, coherent, and well-structured answers, although they may not be fully comprehensive. The student answers additional questions correctly and without significant errors; successfully solves problems and completes practical tasks, experiencing difficulties only with the most complex assignments.

The grade “Satisfactory” is awarded when a student demonstrates knowledge of the overall content of the topic and a satisfactory level of understanding. With the help of guiding questions, the student is able to solve modified (simplified) problems; solves problems and completes practical tasks, although experiencing difficulties even with relatively simple assignments; is unable to formulate a coherent and systematic response independently but provides correct answers to direct questions.

The grade “Unsatisfactory” is awarded when a student's knowledge and skills do not meet the requirements for the grade “Satisfactory”.

The assessment criteria for all other types of students' academic work are based on the requirements of the Regulations on the Organisation of the Educational Process at National Pirogov Memorial Medical University, Vinnytsya,

([https://www.vnmu.edu.ua/downloads/other/polog_organiz_ocv_proc\(2026\).pdf](https://www.vnmu.edu.ua/downloads/other/polog_organiz_ocv_proc(2026).pdf)) and are specified in the programme of the academic discipline.

Assessment of Students' Independent Study

Students' independent study undertaken as part of a topic alongside contact hours is assessed as part of the ongoing assessment of that topic during the relevant practical class.

The maximum number of points a student may receive upon completion of the discipline is 200 points. The minimum passing score is 122 points.

7. METHODOLOGICAL SUPPORT

Teaching and learning materials (lecture notes or extended lecture outlines), thematic plans for lectures, practical classes and independent study, assignments for ongoing assessment, methodological guidelines, and teaching manuals.

8. ACADEMIC DISCIPLINE POLICIES

The completion of learning activities and all academic work within the discipline must comply with the requirements of the Regulations on the Organisation of the Educational Process at National Pirogov Memorial Medical University, Vinnytsya; ([https://www.vnmu.edu.ua/downloads/other/polog_organiz_ocv_proc\(2026\).pdf](https://www.vnmu.edu.ua/downloads/other/polog_organiz_ocv_proc(2026).pdf)), the Regulations on the Organisation of the Educational Process for Higher Education Students Pursuing the Degree of Doctor of Philosophy at National Pirogov Memorial Medical University, Vinnytsya (https://www.vnmu.edu.ua/downloads/other/pologPhD_org.pdf); the Law of Ukraine "On Education" (Article 42); the Law of Ukraine "On Academic Integrity"; and the Code of Academic Integrity of National Pirogov Memorial Medical University, Vinnytsya (https://www.vnmu.edu.ua/downloads/other/kodex_akad_dobr_edit%202026.pdf)

Students are entitled to high-quality educational services and a safe learning environment under martial law, emergency situations and states of emergency; access to up-to-date scientific and educational information; and qualified academic guidance and support in studying the discipline and acquiring practical skills.

The Department's policy on the provision of educational services is student-centred and is based on the regulatory documents of the Ministry of Education and Science of Ukraine and the Ministry of Health of Ukraine, the University Statute, the procedures governing the provision of educational services, including in emergency situations, as stipulated by the principal regulations and administrative directives governing the organisation of the educational process at National Pirogov Memorial Medical University, Vinnytsya, as well as on the principles of academic integrity.

Academic Integrity. When studying the discipline and completing all types of learning assignments and/or research activities, students must comply with the Law of Ukraine "On Education" (Article 42), the Law of Ukraine "On Academic Integrity", and the Code of Academic Integrity of National Pirogov Memorial Medical University, Vinnytsya ([University website → General Information → Key Documents → Code of Academic Integrity](#)). In the event of a violation of academic integrity principles, appropriate measures shall be taken in accordance with the applicable regulatory documents.

Compliance with VNMU Internal Regulations and Safety Requirements during Practical Classes. At the first practical class, the instructor provides a safety briefing on appropriate conduct on the Department premises, informs students of the location of the shelter and the evacuation route to the shelter in accordance with the approved evacuation plan, explains the rules of conduct while proceeding to and remaining in the shelter, and provides instructions on all actions stipulated by the Emergency Response Plan (pursuant to Order No. 505 dated 30 August 2023). In the event of an air raid alert or any other emergency warning signal, the instructor suspends the class. The instructor and students proceed together to the shelter and remain there until the warning signal is cancelled. Once the alert has been lifted, the instructor and students either resume the class in the Department's classrooms or students independently complete the remaining learning material, which is subsequently assessed at the next class.

Requirements for Preparation for Practical Classes

Students are required to participate actively in the educational process: attend classes and come adequately prepared; complete the test tasks related to the current topic in their workbooks and fill in the required diagrams and tables; actively participate in discussions of the class topic; complete all assignments specified in the programme; search for additional information relevant to the topic and present it to their peers.

Students are expected to arrive at classes on time. Late arrival is not permitted in accordance with the Internal Regulations for Students of VNMU. A student who arrives more than 10 minutes late is not admitted to the class and is required to make up the missed class in accordance with the established procedure.

Students are expected to be polite, courteous, and respectful in their interactions with teaching staff, other University employees, fellow students, and other persons studying at VNMU. Students must maintain a quiet and orderly environment and demonstrate appropriate conduct on the Department premises.

In its activities, the Department adheres to the principles of mutual respect and tolerance. Students are expected to uphold the same principles.

Students must comply with safety regulations while on the Department premises.

When working in teaching and research laboratories, students must comply with the applicable safety regulations (published on the website of the Pharmacy Department). When completing practical assignments, students must keep their workstations clean and orderly and leave them tidy upon completion of the practical work.

Use of Mobile Phones and Other Electronic Devices. The use of mobile phones and other electronic devices during classes is not permitted, except for emergency calls or when such devices are used to present supplementary materials relevant to the topic of the class.

Absence from Classes. Missed classes must be made up in accordance with the procedure established by the current Regulations on the Organization of the Educational Process at National Pirogov Memorial Medical University, Vinnytsya ([https://www.vnmu.edu.ua/downloads/other/polog_organiz_ocv_proc\(2026\).pdf](https://www.vnmu.edu.ua/downloads/other/polog_organiz_ocv_proc(2026).pdf)), at the times specified in the make-up schedule published on the website of the Pharmacy Department ([VNMU website](#)), either with the instructor on duty or with the student's regular instructor. Making up a missed class involves completing the assignments related to the topic of the missed class in accordance with the specific requirements of the discipline.

Mastery of lecture topics is assessed during practical classes, seminars (including the assessment of practical skills), and final assessment, in accordance with the Regulations on the Organisation of the Educational Process at National Pirogov Memorial Medical University, Vinnytsya ([https://www.vnmu.edu.ua/downloads/other/polog_organiz_ocv_proc\(2026\).pdf](https://www.vnmu.edu.ua/downloads/other/polog_organiz_ocv_proc(2026).pdf)).

Admission to Final Assessment. The procedure for admission to final assessment in the discipline is set out in the current Regulations on the Organisation of the Educational Process at National Pirogov Memorial Medical University, Vinnytsya ([https://www.vnmu.edu.ua/downloads/other/polog_organiz_ocv_proc\(2026\).pdf](https://www.vnmu.edu.ua/downloads/other/polog_organiz_ocv_proc(2026).pdf)).

Students are admitted to final assessment provided that they have no outstanding academic requirements: the average grade for ongoing assessment must be at least 3.0 (72 points on the 120-point scale); all final sessions for the content modules must have been completed with a passing grade ("3" or higher); and all missed practical classes must have been made up with a passing grade ("3" or higher). Otherwise, the student must improve their average grade by making up unsatisfactory grades and must make up all missed classes.

Additional Points for Individual Assignments. Students may receive additional points in the discipline for the successful completion of individual assignments, the content of which is published on the Department's website as part of the teaching and learning materials for the discipline. The number of points awarded is determined based on the results of the individual assignment in accordance with the current Regulations on the Organisation of the Educational Process at National Pirogov Memorial Medical University, Vinnytsya.

([https://www.vnmua.edu.ua/downloads/other/polog_organiz_ocv_proc\(2026\).pdf](https://www.vnmua.edu.ua/downloads/other/polog_organiz_ocv_proc(2026).pdf)).

Resolution of Conflict Situations

In the event of misunderstandings or concerns regarding the quality of educational services, assessment of academic performance, or other conflict situations involving an instructor, students should first raise their concerns directly with the instructor. If the issue remains unresolved, the student has the right to submit an appeal to the Head of the Department in accordance with the Regulations on the Consideration of Appeals from Higher Education Students at National Pirogov Memorial Medical University, Vinnytsya ([VNMU website → General Information → Key Documents](#)).

Students also have the right to contact the student self-government bodies, the administration of the Faculty (Institute), or the University administration, either directly or through the designated feedback channels (“trust boxes”), links and addresses for which are available on the official VNMU website.

The Department recognises that a student-centred approach entails students’ responsibility for the conscious and active acquisition of knowledge and for proper compliance with the rules and requirements established by applicable legislation and VNMU regulatory documents. The Department reserves the right to inform the relevant University bodies of any violations committed by students.

Policy on Blended Learning

The organisation of blended learning is governed by the Regulations on the Introduction of Elements of Distance Learning at National Pirogov Memorial Medical University, Vinnytsya ([VNMU website → General Information → Key Documents](#)). The main online learning platforms used for classes are Microsoft Teams and Google Meet.

The procedures for conducting practical classes, lectures, make-up classes, and consultations in the distance learning format are published on the Department’s webpage ([VNMU website → Pharmacy Department → For Students/Postgraduate Students → Mode of Study → Year of Study → Teaching and Learning Materials](#)).

Communication with the Instructor. Students may contact the instructor via Microsoft Teams chat, messaging applications (Viber, Telegram, WhatsApp), or email, as determined by the instructor, during working hours.

9. LEARNING RESOURCES

Teaching and learning materials for the discipline are available on the Department’s website. The materials can be accessed via: [VNMU website → \[Pharmacy Department\] → For Students/Postgraduate Students](#).

LITERATURE

Core Literature

1. Pharmacy – based technology of drugs: the manual for applicants of higher education / O.I. Tykhonov, O.A. Yarnykh, O.A. Rukhmakova, G.B. Yuryeva: Edited by O.I. Tykhonov and T.G. Yarnykh. – Kharkiv: NUPh: Golden Pages, 2019. – 488 p.
2. Teaching manual “Pharmaceutical Technology: Pharmacy Compounding” for students of the Faculty of Pharmacy (specialty “Pharmacy, Industrial Pharmacy”), Part 1. <https://cutt.ly/KeXcLMWc>
3. Teaching manual “Pharmaceutical Technology: Pharmacy Compounding” for students of the Faculty of Pharmacy (specialty “Pharmacy, Industrial Pharmacy”), Part 2. <https://cutt.ly/BeXcKTvA>
4. Elder, A, Ring, C, Heitmiller, K, Gabriel, Z, Saedi, N. The role of artificial intelligence in cosmetic dermatology—Current, upcoming, and future trends. J Cosmet Dermatol. 2021; 20: 48–52. <https://doi.org/10.1111/jocd.13797>
5. Implementation of personalized medicine services in community pharmacies: Perceptions of independent community pharmacists Katelyn M. Alexander, Holly S. Divine, Cathy R. Hanna, Yevgeniya Gokun, Patricia R. Freeman Pages 510-517 <https://doi.org/10.1331/JAPhA.2014.13041>
6. Kennedy M. J. (2018). Personalized medicines - are pharmacists ready for the challenge?. Integrated pharmacy research & practice, 7, 113–123. <https://doi.org/10.2147/IPRP.S133083>
7. L’ORÉAL презентував пристрій для персоналізованого догляду за шкірою і макіяжу. Електронний ресурс. Режим доступу: <https://eventukraine.com/beauty/l-oreal-prezentuvav-pristrij-dlya-personalizovanogo-doglyadu-za-shkiroju-i-makiyazhu/>

8. Personalized medicine https://en.wikipedia.org/wiki/Personalized_medicine
9. Ruth E. Nemire, PharmD, EdD, Michael De Giglio, RPh Personalized Medicine Brings Pharmacy Science Back to the Future. Pharmacy Times, February 2012 Infectious Disease , Volume 78, Issue 2 <https://www.pharmacytimes.com/publications/issue/2012/february2012/personalized-medicine-brings-pharmacy-science-back-to-the-future>
10. William George «The Pharmacy of the Future Will Focus on Personalized Care» January 02, 2019 <https://www.mckesson.com/Blog/Pharmacy-of-the-Future-Personalized-Care/>

Supplementary Literature

1. Pharmaceutical Technology: teaching and methodological manual for higher education students. O. V. Mazulin, A. O. Ostapenko, O. S. Shpychak et al. 3rd ed., unchanged. Lviv: Publisher.
2. Law of Ukraine “On Medicinal Products” of 23 August 2023. Available at: <https://zakon.rada.gov.ua/laws/show/2469-20#Text>.
3. State Pharmacopoeia of Ukraine. 2nd ed., Supplement 5. Kharkiv: Ukrainian Scientific Pharmacopoeial Centre for Quality of Medicines.
4. State Pharmacopoeia of Ukraine. 2nd ed., Supplement 6. Kharkiv: Ukrainian Scientific Pharmacopoeial Centre for Quality of Medicines.
5. State Pharmacopoeia of Ukraine. 2nd ed., Supplement 7. Kharkiv: Ukrainian Scientific Pharmacopoeial Centre for Quality of Medicines.
6. State Pharmacopoeia of Ukraine. 2nd ed., Supplement 7. Kharkiv: Ukrainian Scientific Pharmacopoeial Centre for Quality of Medicines.
7. State Pharmacopoeia of Ukraine. 2nd ed., Supplement 8. Kharkiv: Ukrainian Scientific Pharmacopoeial Centre for Quality of Medicines.
8. Order of the Ministry of Health of Ukraine No. 360 of 19 July 2006 “On Approval of the Rules for Prescribing Medicinal Products and the Procedure for Dispensing Medicinal Products from Pharmacies and Their Structural Units”.
9. Order of the Ministry of Health of Ukraine No. 1099 of 10 August 2025 “On Approval of State Sanitary Rules and Regulations: Sanitary and Anti-Epidemic Requirements for Pharmacy Institutions”.
10. Order of the Ministry of Health of Ukraine No. 812 of 17 October 2012 “On Approval of the Rules for the Manufacture (Compounding) of Medicinal Products in Pharmacy Conditions”. <http://zakon1.rada.gov.ua/laws/show/z1606-04>
11. Guideline ST-N MOZU 42-4.5:2015 “Requirements for the Compounding of Non-Sterile Medicinal Products in Pharmacy Conditions”. http://www.moz.gov.ua/ua/portal/dn_20150701_0398.html
12. Guideline ST-N MOZU 42-4.6:2015 “Requirements for the Compounding of Sterile Medicinal Products in Pharmacy Conditions”.

ELECTRONIC RESOURCES

1. University website: <https://vnmue.edu.ua>
2. University Library website: <http://library.vnmue.edu.ua> <http://library.vnmue.edu.ua>
3. Department of Pharmacy, National Pirogov Memorial Medical University: <https://www.vnmue.edu.ua>
4. World Health Organization: <http://www.who.int/en/>
5. Ukrainian Testing Center for Professional Quality in Healthcare:
<https://www.testcentr.org.ua/uk/> <https://www.testcentr.org.ua/uk/>
6. Ministry of Health of Ukraine: <https://moz.gov.ua/> <https://moz.gov.ua/>
7. Public Health Center of the Ministry of Health of Ukraine: <https://phc.org.ua/kontrol-zakhvoryuvan> <https://phc.org.ua/kontrol-zakhvoryuvan>
8. Official web portal of the Verkhovna Rada of Ukraine:
<https://www.rada.gov.ua/> <https://www.rada.gov.ua/>
9. State Service of Ukraine on Medicines and Drugs Control:
<https://www.dls.gov.ua/> <https://www.dls.gov.ua/>

The syllabus for “ Personalized Pharmacy and Cosmetology ” was discussed and approved at a meeting of the Department of Pharmacy (Minutes No. 1, dated 26 August 2026).

Course Coordinator

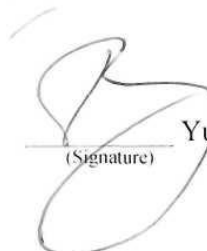
Candidate of Pharmaceutical Sciences, Associate Professor
(Academic degree and title)


(Signature)

Hanna KRAMAR

Acting Head of the Department of Pharmacy

Candidate of Pharmaceutical Sciences,
Associate Professor
(Academic degree and title)


(Signature)

Yulia TOMASHEVSKA