

National Pirogov Memorial Medical University, Vinnytsia

«APPROVE»

Higher Educational Institution
Vice-Rector for Scientific,
Pedagogical and Academic Affairs
Inna ANDRUSHKO

"29" August 2025 year

«AGREED»

Head of the Department of Pharmacy
 Olena KRYVOVIAZ

"29" August 2025 year

SYLLABUS
of academic discipline

PHARMACEUTICAL INFORMATION.
WORKING WITH SCIENTIFIC SOURCES

Specialty	226 Pharmacy, Industrial Pharmacy
Specialization	226.01 Pharmacy
Educational level	the second (master`s) level
Educational programme	<i>EPP «Pharmacy», 2023</i>
Academic year	2025-2026
Department	Pharmacy
Lecturer (if lectures are given)	Prof. Olena KRYVOVIAZ, Ass. Prof. Yulia TOMASHEVSKA, PhD, Ass. Prof. Hanna KRAMAR
Contact information	<i>pharmacy@vnmu.edu.ua</i>
Syllabus compiler	Prof. Olena KRYVOVIAZ

Status and structure of the discipline

Discipline status	optional courses
Discipline code in EPP/ discipline place in EPP	EC 42// optional courses, optional components of EP
Course / semester	3 rd course (V semester)
The amount of discipline (the total number of hours / number of credits ECTS)	90 hours /3,0 credits ECTS
Number of content modules	1 modules
The structure of the discipline	Lectures – 10 hours Practical classes - 30 hours Independent work – 50 hours
Language of study	English
Form of education	Full - time (or remote/mixed according to the order)

1. **Опис дисципліни**

Коротка анотація курсу, актуальність.

The academic discipline "Pharmaceutical Information. Working with Scientific Sources" belongs to the cycle of disciplines of professionally-oriented training of specialists in specialty 226 "Pharmacy, Industrial Pharmacy". The main focus of the program is the successful acquisition of knowledge necessary for mastering the disciplines of professional training, namely: searching and evaluating professionally-oriented information, understanding the importance of the level of its evidence, developing skills in working with official sources of information in the field of pharmacy and related industries, working with domestic and foreign sources of scientific information in the field of medicine and pharmacy are important components not only of the training of the future master of pharmacy, but also of his further professional activity and continuous professional development. In conditions of an excessive amount of information data of questionable quality, the assessment of additional sources of information for the presence of false or manipulative statements and the identification of unethical practices in advertising information also become particularly relevant.

Prerequisites

The elective course is based on the secondary education of applicants, as well as the study of such disciplines of the curriculum as Introduction to Pharmacy and Philosophy.

Course Objectives and Their Significance for Professional Activity.

The course aims to develop critical thinking and media literacy in future pharmacy professionals, to acquire knowledge and acquire competencies related to the use of relevant information for effective continuous professional development.

Postrequisites

The discipline "Pharmaceutical Information. "Working with scientific sources" is the basis for studying all disciplines of the professional training curriculum, the study of which is associated with the search and processing of relevant information: information technologies in pharmacy, Drug Technology: FC., drug technology: ITD, organization and economics of pharmacy, technology of medicinal cosmetics, medical cosmetics, clinical pharmacy and pharmaceutical care, pharmacology, biopharmacy, pharmaceutical management and marketing, pharmaceutical law and legislation, pharmacoconomics and most professionally oriented elective courses, for example, topical issues of modern pharmacy, academic integrity, methodology of scientific research in pharmacy, clinical trials, personalized pharmacy and cosmetology, training of a pharmaceutical worker, pharmaco-technological aspects of the development and registration of medicines and others, which involves

the integration of teaching with the above disciplines and the formation of skills to apply knowledge in the process of further education and in professional activities.

The elective course "Pharmaceutical Information. Working with Scientific Sources" will make it easier for a higher education student to study professional disciplines, lay the foundations of critical thinking, and contribute to the formation of the ability to identify and adequately evaluate information necessary for work in the field of pharmacy.

1. Learning outcomes.

- *Integral (IC)*

The ability to solve complex problems and critically analyse and solve practical problems in professional pharmaceutical and/or research and innovation activities using the provisions, theories and methods of fundamental, chemical, technological, biomedical and socio-economic sciences; integrate knowledge and solve complex issues, formulate judgements with insufficient or limited information; clearly and unambiguously convey one's knowledge, conclusions and their validity to professional and non-professional audiences.

- **General competencies (GC):**

GC 02. Ability to think abstractly, analyze and synthesize.

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

GC 06. Skills in using information and communication technologies.

GC 07. Ability to choose a communication strategy, ability to work in a team and with experts from other fields of knowledge / types of economic activity.

GC 09. Ability to conduct research at the appropriate level.

GC 11. Ability to preserve and multiply moral, cultural, scientific values and achievements of society based on understanding the history and patterns of development of the subject area, its place in the general system of knowledge about nature and society and in the development of society, technology and engineering, use various types and forms of physical activity for active recreation and leading a healthy lifestyle.

- **Special (Professional, subject) competencies (PC):**

PC 01. Ability to collect, interpret and apply data necessary for professional activity, conduct research and implement innovative projects in the field of pharmacy.

PC 02. Ability to integrate knowledge and solve complex pharmacy problems in broad or multidisciplinary contexts.

PC 03. Ability to solve pharmacy problems in new or unfamiliar environments with incomplete or limited information, taking into account aspects of social and ethical responsibility.

PC 04. Ability to use knowledge of regulatory and legislative acts of Ukraine and recommendations of good pharmaceutical practices in professional activity.

PC 06. Ability to clearly and unambiguously convey one's own knowledge, conclusions and reasoning in the field of pharmacy to specialists and non-specialists, in particular to students.

Integrative final program learning outcomes, the formation of which is facilitated by the academic discipline:

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

PLO 02. Critically understand scientific and applied problems in the field of pharmacy.

PLO 03. Evaluate and ensure the quality and efficiency of activities in the field of pharmacy.

PLO 05. Plan and implement professional activities based on the regulatory legal acts of Ukraine and recommendations of good pharmaceutical practices.

PLO 07. Demonstrate the ability to independently search, analyze and synthesize information from various sources, including professional literature, patents, databases; evaluate it, in particular, using statistical analysis, as well as apply these results to solve typical and complex specialized tasks of professional activity, including the development and production of medicines.

2. Content and logistics of the discipline

Module 1 «Pharmaceutical Information. Working with Scientific Sources»	II semester 90 hours /3 credits ECTS	Lectures №5 Practical classes №15 Extracurricular work №7
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The discipline includes 5 topics, which are divided into 1 module.

Module 1 «Pharmaceutical Information. Working with Scientific Sources»

Topic 1. Definition of information. Purpose of use and dissemination of information. Law of Ukraine on information. Sources of information in the pharmaceutical industry: their types, access to them, assessment. Concepts of media literacy and information hygiene.

Topic 2. Official information in the pharmaceutical industry. Types of regulatory documents, their purpose and structure. State register of medicinal products, national list of medicinal products, registers of licensees. National and international treatment and pharmaceutical care protocols.

Topic 3. Scientific information: search and analysis using modern tools. Types of scientific publications, principles of academic integrity, concepts of primary source and plagiarism. Checking for plagiarism. Assessment of scientific information: levels of evidence of research. Types and stages of research on medicinal products.

Topic 4. Additional sources of information in the pharmaceutical industry. Information from opinion leaders. Statistical information from open and commercial databases. Information from social networks.

Topic 5. Signs of information manipulation. Definition of dubious and unreliable information. Advertising and promotional products, advertising law and liability for its violation.

The topics of the lecture course reveal problematic issues of the relevant sections of the discipline.

Methods of lectures: not taught in class, materials are posted on the department's information resources.

Practical classes provide a theoretical justification of the main issues of the topic and the acquisition of the following practical skills:

1. to analyse and use regulatory and reference literature on the manufacture of medicinal products and the use of excipients;

2. to systematise and classify excipients by nature, chemical structure, diversity of their influence on the properties of active pharmaceutical ingredients, and method of their manufacture;

3. to operate with knowledge of the physical and chemical properties of excipients and their influence on the processes of release, absorption, distribution and elimination of drugs and cosmetics;

4. to introduce excipients into the composition of extemporaneous powders and preparations;

5. to correctly dissolve excipients in various solvents;

6. to select excipients in the manufacture of heterogeneous liquid dosage forms in a pharmacy;

7. Mix different bases with medicinal substances in the manufacture of ointments in a pharmacy;

8. Prepare suppository bases and administer medicinal substances with different physical and chemical properties;

9. Select stabilisers, isotonic agents in the manufacture of injectable and infusion solutions;

10. Introduce preservatives, prolongers, stabilisers, buffer solutions into sterile dosage forms;

11. to select excipients to ensure the required quality of solid medicines in industrial conditions;
12. to select excipients to ensure the required quality of liquid medicines in industrial conditions;
13. to select excipients to ensure the required quality of soft medicines in industrial conditions;
14. to evaluate and understand the possible interaction and safety of excipients in cosmetics;
15. use and rationally mix DRs in homeopathic remedies.

The student's independent work provides preparation for practical classes and intermediate tests, study of topics for independent extracurricular work, writing essays, preparation of presentations, tables. The control of mastering the topics of independent extracurricular work is carried out at the intermediate control classes and the final control of the discipline.

Individual work includes the study of scientific literature, preparation of reviews on the topics provided for presentation at the meetings of the student scientific circle, the implementation of scientific and practical researches, participation in specialized competitions, scientific and practical conferences and organization of students' research works.

Thematic plans of lectures, calendar plans of practical classes, thematic plan of independent extracurricular work, volume and directions of individual work are published on the website of the department.

The route for obtaining materials: Department of Pharmacy / for students / Full-time education / Pharmacy, industrial pharmacy / 2 course / Educational materials / or through the link <https://www.vnmu.edu.ua/кафедра-фармації#>.. Access to the materials is carried out through the student's corporate account s000XXX@vnmu.edu.ua.

4. Forms and methods of monitoring academic performance

Current control in practical studies	Methods: <i>oral or written survey, testing, electronic survey, solving situational problems, conducting laboratory studies, interpreting them and evaluating their results (drawing up a protocol in a workbook)</i>
Final control of the discipline (credit) at the end of the 4th semester	Methods: <i>oral questioning</i> (according to the Regulation of the Academic process in VNMU named after M.I. Pirogov (link https://www.vnmu.edu.ua/General information))
Learning success diagnostic tools	Theoretical questions, tests, practical tasks, practical skills demonstration

5. Assessment criteria

Knowledge assessment is carried out in accordance with the Regulations of the Academic process in VNMU named after M.I. Pirogov (link <https://www.vnmu.edu.ua/General information>)

Continuous assessment	On a four point system of traditional assessments: 5 «excellent», 4 «good», 3 «satisfactory», 2 «unsatisfactory»
Credit	On a 200-point scale (the arithmetic average grade for the semester is converted into points) Credited: 122 to 200 points Not credited: less than 122 points (See Grading Scale)

Discipline Score Scale: National and ECTS

The sum of grades for all types of educational activities	Score ECTS	Score on a national scale	
		For exam, course project (work), practice	for credit test
180-200	A	excellent	credited
170-179,99	B	good	
160-169,99	C		
141-159,99	D	satisfactory	
122-140,99	E	satisfactory	
0-121,99	FX	unsatisfactory with the possibility of reassembly	is not credited with the possibility of reassembling
	F	unsatisfactory with a mandatory reexamination of discipline	is not credited with mandatory reexamination of discipline

6. Policy of discipline / course

The student has the right to receive high-quality educational services, access to contemporary scientific and educational information, qualified advisory assistance during the study of discipline and mastering practical skills. The policy of the department during the providing of educational services is a student-centered, based on normative documents of the Ministry of Education and the Ministry of Health of Ukraine, the Statute of the University and the Procedure for the Providing of Educational Services regulated by the main principles of the organization of the educational process in VNMU named after M.I. Pirogov and the principles of academic integrity (link [https://www.vnm.edu.ua/General information](https://www.vnm.edu.ua/General%20information)).

Adherence to the rules of VNMU, safety techniques in practical classes.

Safety instruction is given at the first practical lesson by the teacher. The briefing is registered in the Safety Briefing Journal. A student who has not been instructed is not allowed to practice.

In the event of the announcement of the "Air Alert" signal or other warning signals, the teacher stops the class, informs the students of the need to go to the civil defense shelter and stay there until the signal is canceled. The teacher informs higher education students of further actions after the signal is canceled: to continue the class or to recommend that they independently finalize the material with a subsequent survey at the next class (Order No 92 of 03.09.2024).

Requirements for preparation for practical classes. The student must be prepared for a practical lesson, tasks to prepare for the current topic must be completed.

A student should come to class on time, without delay. A student who is late is not allowed to study and must work it in the prescribed manner.

In practical classes, the student must be dressed in a work uniform. Students who do not have a work uniform are not allowed to study.

The student must follow the rules of safety in practical classes and during the stay in the department.

When discussing theoretical issues, students should demonstrate tolerance, courtesy and respect for their colleagues and the teacher; when performing practical tasks, the workplace should be kept in order and be cleaned after performing practical work.

Usage of mobile phones and other electronic devices. The use of mobile phones and other electronic devices in the classroom is allowed only on the instructions of the teacher.

Academic integrity. When studying the discipline, the student must be guided by the Code of Academic Integrity and Corporate Ethics of VNMU named after M.I. Pirogov (link : [https://www.vnm.edu.ua/General information](https://www.vnm.edu.ua/General%20information))/ Code of Academic Integrity). In case of violation

of the norms of academic integrity during the current and final controls student receives a grade of "2" and must work it out to his teacher in the prescribed manner within two weeks after receiving an unsatisfactory assessment).

Missed classes. Missed classes are working out in the manner prescribed by Regulations of the Academic process in VNMU named after M.I. Pirogov (link [https://www.vnmu.edu.ua/General information](https://www.vnmu.edu.ua/General%20information)) at the time of work out schedule to the teacher on duty.

The procedure for admission to the discipline final control is given in the Regulations of the Academic process in VNMU named after M.I. Pirogov (link [https://www.vnmu.edu.ua/General information](https://www.vnmu.edu.ua/General%20information)). To the final control allowed students who do not have missed practical classes and lectures and received an average traditional grade of at least "3".

Additional points. Individual points in the discipline (from 1 to 12) that student can receive for individual work, the amount of which is published on the website of the department in the educational methodical materials of the discipline, the number of points is determined by the results of IRS according to Regulation of the Academic process in VNMU named after M.I. Pirogov.

Conflict resolution. In case of misunderstandings and complaints to the teacher because of the quality of educational services, knowledge assessment and other conflict situations, student should submit his / her claims to the teacher. in VNMU named after M.I. Pirogov.

Politics in terms of remote learning. Distance learning regulated by the Regulations of the elements of remote learning in VNMU named after Pirogov M.I. The procedure for conducting practical classes and lectures, practicing and consultations during distance learning is published on the department's website.

Feedback from teachers carried out through a distance learning platform (Microsoft Teams) is via messengers or e-mail (at the teacher's choice) during working hours.

Higher education applicants have the right to receive quality educational services, access to up-to-date scientific and educational information, qualified advisory assistance in the study of the discipline and mastery of practical skills. The policy of the department in the provision of educational services is student-centered, based on the regulations of the Ministry of Education and the Ministry of Health of Ukraine, the university charter and the procedure for the provision of educational services, regulated by the basic provisions of the organization of the educational process at the Pirogov National Medical University and the principles of academic integrity.

7. Educational resources.

Educational and methodological support of the discipline is published on the website of the department (<https://www.vnmu.edu.ua/кафедра-фармації#> / for students). Consultations are held twice a week according to the schedule.

8. The timetable and distribution of groups with assigned teachers are published on the web page of the department (<https://www.vnmu.edu.ua/кафедра-фармації#> / for students).

9. Questions to the intermediate and final semester control (credit) of the discipline are published on the web page of the department (<https://www.vnmu.edu.ua/кафедра-фармації#> / for students).

Training and methodological literature

1. Hayek, A., Sridhar, S. B., Rabbani, S. A., & Shareef, J. (2024). From textbooks to online sources: An Investigation of drug information resource preference and utilization among healthcare Professionals. *Clinical Epidemiology and Global Health*, 26, 101566.

2. Seidel, P., Rolander, B., Eriksson, A. L., Lindahl, U., Wallerstedt, S. M., Hägg, S., & Kling, A. (2023). Drug information sources in professional work—a questionnaire study on physicians' usage and preferences (the drug information study). *European Journal of Clinical Pharmacology*, 79(6), 767–774.

3. Rollison, H. E., Mitra, P., Chanteux, H., Fang, Z., Liang, X., Park, S. H., Costales, C., Hanna, I., Thakkar, N., Vergis, J. M., Bow, D. A., Hillgren, K. M., Brumm, J., Chu, X., Hop, C. E., Lai, Y., Li, C. Y., Mahar, K. M., Salphati, L., . . . Fenner, K. S. (2024). Survey of Pharmaceutical Industry's Best Practices around In Vitro Transporter Assessment and Implications for Drug Development: Considerations from the International Consortium for Innovation and Quality for Pharmaceutical Development Transporter Working Group. *Drug Metabolism and*

Disposition, 52(7), 582–596.

4. Kyle, M. K. (2022). Incentives for pharmaceutical innovation: What's working, what's lacking. *International Journal of Industrial Organization*, 84, 102850.

5. Rix, I., Heerfordt, I. M., Cramer, A., Horwitz, H., & Olsen, R. H. (2024). Sources of drug information. *Ugeskrift for Læger*, 186, 1–8.

Information resources

1. E-mail address of the university website: <http://vnmue.edu.ua>
2. E-mail address of the university library website: <http://library.vnmue.edu.ua>
3. E-mail address: Department of Pharmacy, Pirogov National Medical University:
<http://www.vnmue.edu.ua>
4. World Health Organization <http://www.who.int/en/>
5. Testing center <https://www.testcentr.org.ua/uk/>
6. Ministry of Health of Ukraine <https://moz.gov.ua/>
7. Center for Public Health of the Ministry of Health of Ukraine
<https://phc.org.ua/kontrol-zakhvoryuvan>

The syllabus of the discipline "Pharmaceutical Information. Working with Scientific Sources" was discussed and approved at the meeting of the department Department of Pharmacy (record № 1, dated August "26" 2025)

Responsible for the academic discipline
(signature)



Olena KRYVOVIAZ

The Head of the Pharmacy Department
(signature)



Olena KRYVOVIAZ