

National Pirogov Memorial Medical University, Vinnytsia

"APPROVE"

Acting rector of higher education institution

Viktoriiia PETRUSHENKO

" 31 " 08 2023 year

«AGREED»

Head of the Department of Pharmacy

Olena KRYVOVIAZ

" 31 " 08 2023 year

SYLLABUS
of academic discipline

EC 18 THEORETIC BASES OF PHARMACY COMPOUNDING

Specialty	226 Pharmacy, Industrial Pharmacy
Educational level	the second (master`s) level
Educational programme	<i>EPP «Pharmacy», 2022</i>
Academic year	2023-2024
Department	Pharmacy
Lecturer (if lectures are given)	Prof. of HEI Olena KRYVOVIAZ, Ass. Prof. of HEI Yulia TOMASHEVSKA, PhD, Ass. Prof. Hanna KRAMAR
Contact information	<i>pharmacy@vnmu.edu.ua</i>
Syllabus compiler	PhD, Ass. Prof. Hanna KRAMAR

Status and structure of the discipline

Discipline status	optional courses
Discipline code in EPP/ discipline place in EPP	EC 18// optional courses, optional components of EP
Course / semester	2 rd course (III semester)
The amount of discipline (the total number of hours / number of credits ECTS)	90 hours /3,0 credits ECTS
Number of content modules	2 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. Description of the discipline

Brief annotation, actuality. (*What is the subject of study? What knowledge will the student acquire?*)

The discipline "Theoretical bases of pharmacy compounding" belongs to the cycle of disciplines for professional-oriented training of specialists in specialty 226 "Pharmacy", 2022. The discipline lays the foundations for knowledge of historical aspects of the formation and trends in the development of pharmaceutical technology in the countries of the world and in Ukraine; theoretical aspects of technological processes in the manufacture of medicines in pharmacies and industrial pharmaceutical enterprises. The program is focused on gaining knowledge of the technological processes of manufacturing various dosage forms, the principles of operation of equipment and equipment used in pharmaceutical technology.

As a result of studying the course of their choice, students of higher education will acquire the knowledge of:

- Methods of implementing knowledge in solving practical tasks.
- Modern trends in the development of the industry.
- Structure and features of professional activity.
- Hydromechanical, mechanical, thermal, mass exchange processes.
- Provision of technological processes with devices in the pharmaceutical industry.
- Directions of rational use of machines and mechanisms.
- Ways of effective development and implementation of new technological processes and high-performance machines and devices.
- Technological processes in the manufacture of various dosage forms.
- Theoretical basics of grinding, sieving and mixing of solid materials.
- Theoretical foundations of dissolution of solid bodies in liquids.
- Theoretical foundations of the distribution of heterogeneous systems.
- Theoretical foundations of extraction.
- Theoretical foundations of stabilization of heterogeneous systems.

Prerequisites. (*Knowledge of which disciplines is required for a higher education student to successfully master this discipline?*)

The elective course is based on the study of physics and chemistry during general training, and also uses such curriculum disciplines as general and inorganic chemistry as prerequisites (knowledge of the physical and chemical properties of compounds, the structure of matter, concepts of aggregate state, solutions, concentration, etc.), biological physics with physical methods of analysis (knowledge of the basics of thermodynamics, mechanics, basic knowledge of solid state physics and materials science), introduction to pharmacy (main

interdisciplinary interactions in pharmacy, concepts of drug technology and biopharmacy), biology with the basics of genetics (concepts about the cellular structure of living matter, basic knowledge about its chemical composition, knowledge of the differences in the structure of plant and animal cells).

The purpose of the course and its significance for professional activities: acquainting students of higher education with the historical path of development of pharmaceutical technology, formation of theoretical foundations of the technology of dosage forms in students of higher education; acquainting students of higher education with the main technological processes of grinding, dissolution, diffusion, filtration, emulsification, extraction and other general processes of production of various dosage forms, acquisition of students of higher education with practical competencies in the field of professional activity of pharmaceutical workers.

Postrequisites. (*How will it be needed in the process of further study and professional activity?*)

The optional course is the basis for studying the disciplines "Technology of Drugs: Pharmacy compounding", "Physical and Colloidal Chemistry", "Drug technology:ITD", "Technology of Medicinal Cosmetics", which involves the integration of teaching with the above disciplines and the formation of skills apply knowledge in the process of further education and professional activity.

2. Learning outcomes. (*A concrete result with a focus on practical application, which will be achieved and which can be verified*).

• *Integrative final program learning outcomes, the formation of which is facilitated by the Initial Theoretic bases of pharmacy compounding:*

• Identification of future professional activity as socially significant for human health.

• Implementation of professional activity based on general knowledge of the main stages of formation and development of pharmaceutical science and practice in Ukraine and the world, practical approaches to the organization of medicines and public health facilities, regulations of Ukraine and recommendations of good pharmaceutical practices.

• Rationale for decision making in standard professional situations.

• Formation of basic knowledge and acquisition of practical skills for further study of professional disciplines.

• *General competencies (GC):*

• GC 2. Ability to apply knowledge in practical situations.

• GC 4. Ability to think abstractly, analyze and synthesize, learn and be modernly trained.

• GC 6. Knowledge and understanding of the subject area and understanding of the profession.

• GC 9. Skills in the use of information and communication technologies.

• GC 11. Ability to evaluate and ensure the quality of work performed.

• *Program learning outcomes for the discipline:*

PLO 2. Apply knowledge of general and professional disciplines in professional activities.

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

PLO 4. Demonstrate the ability to independently search, analyze and synthesize information from various sources to solve typical problems of professional activity.

PLO 5. Position their professional activities and personal qualities in the pharmaceutical labor market; formulate goals of their own activities, taking into account social and industrial processes.

PLO 9. Carry out professional activities using reference literature, information technology, "Information Databases", navigation systems, Internet resources, software and other information and communication technologies.

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

PLO 16. Predict and determine the impact of environmental factors on the quality of medicines and consumer characteristics of other pharmacy products during their storage.

3. Content and logistics of the discipline

Module 1: «Theoretic bases of pharmacy compounding»	3 semester 90 hours /3 credits ECTS	Lectures №5 Practical classes №15 Extracurricular work №8
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The course includes 6 topics, which are divided into 1 thematic module.

Module 1: «Theoretical bases of pharmacy compounding»

Thematic module 1. Basic terms, concepts and biopharmaceutical aspects of the technology of dosage forms. Classification of technological processes. Theoretical foundations of grinding, sieving, mixing and dissolving.

Topic 1. Basic terms, concepts and biopharmaceutical aspects of the technology of dosage forms. Classification of technological processes. Trends in the development of pharmaceutical technology in the countries of the world and in Ukraine.

Topic 2. Theoretical foundations of grinding, sieving and mixing of solid materials.

Topic 3. Theoretical foundations of dissolution of solid bodies in liquids.

Thematic module 2. Theoretical basis of distribution of heterogeneous systems, extraction and stabilization of heterogeneous systems.

Topic 4. Theoretical basis of distribution of heterogeneous systems

Topic 5. Theoretical bases of extraction.

Topic 6. Theoretical bases of stabilization of heterogeneous systems.

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

Lecture methods: not taught in class, materials are posted on the department's information resources.

Practical classes provide theoretical substantiation of the main issues of the topic and contribute to the formation of skills:

- Determine the relationship between the development of drug technology and the general historical development of society.
- To substantiate the theoretical foundations of grinding, sieving and mixing of solid materials.
- Formulate the basics of the theory of dissolution of solids in liquids.
- Use the main theoretical foundations of the distribution of heterogeneous systems.
- Formulate the theoretical foundations of extraction.
- Interpret the main processes that characterize the stability and coagulation of colloidal systems.
- Explain the main processes occurring in heterogeneous systems.
- To know the types of instability and the theoretical foundations of stabilization of heterogeneous systems.

- To use normative legal acts regulating pharmaceutical activity in Ukraine and abroad.
- Use professional knowledge to solve practical situations.
- Analyze professional information, make informed decisions, acquire up-to-date knowledge.
- To carry out professional activities that require updating and integration of knowledge.

The independent work of higher education students involves preparation for practical classes and intermediate controls, studying topics for independent out-of-class work, writing essays, preparing presentations, tables. The control of mastering the topics of independent out-of-class work is carried out at intermediate control classes and final control in 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 / 3 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 semester control (credit) at the end of the III semester	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, situational tasks, 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 mean grade for the semester is converted into points) Pass: from 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.vnmu.edu.ua/General> information).

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

The safety briefing shall be conducted by the instructor at the first practical lesson. The briefing shall be recorded in the Safety Briefing Log. A student who has not been briefed is not allowed to participate in practical training.

In case of announcement of the "Air Alert" signal or other warning signals, the teacher stops the class, informs the higher education students about 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. 505 of 30.08.2023).

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 must come to class on time. 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.vnmu.edu.ua/General> information)/ 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 6 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).

The syllabus of the discipline «Theoretical bases of pharmacy compounding» discussed and approved at the meeting of the Department of Pharmacy (record № 1, dated "29" August 2023)

Responsible for the academic discipline  PhD, Ass. Prof. of HEI Hanna KRAMAR
(Signature)

The Head of the Pharmacy Department  Prof. of HEI Olena KRYVOVIAZ
(signature)