

MINISTRY OF HEALTH PROTECTION OF UKRAINE  
ODESSA NATIONAL MEDICAL UNIVERSITY

Department of general and clinical pharmacology and pharmacognosy

**APPROVED**  
Vice-rector for scientific and pedagogical work  
Eduard BURYACHKIVSKY  
September 01, 2025



WORKING PROGRAM OF THE EDUCATIONAL DISCIPLINE  
"PHARMACOTHERAPY WITH THE BASICS OF PHARMACOKINETICS"

**Level of higher education:** second (master's)

**Field of knowledge:** 22 "Healthcare"

**Specialty:** 226 "Pharmacy. Industrial pharmacy"

**Specialization:** 226.01 "Pharmacy"

**Educational and professional program:** Pharmacy. Industrial pharmacy

The working program is based on the educational and professional program "Pharmacy, Industrial Pharmacy" for training specialists of the second (master's) level of higher education in the specialty 226 "Pharmacy, Industrial Pharmacy" specialization 226.01 "Pharmacy" field of knowledge 22 "Healthcare", approved by the Academic Council of ONMedU (minutes No. 10 dated June 27, 2024) and the educational and professional program "Pharmacy, Industrial Pharmacy" for training specialists of the second (master's) level of higher education in the specialty 18 "Pharmacy (by specializations) specialization 18.01 "Pharmacy" field of knowledge I "Healthcare and Social Security", approved by the Academic Council of ONMedU (minutes No. 8 dated April 24, 2025).

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The working program was approved at the meeting of the Department of General and Clinical Pharmacology and Pharmacognosy Protocol No. 1 dated 08/28/2025

Head of the Department



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Liana UNHURYAN

Approved by the Subject Cycle Methodological Commission for Pharmaceutical Disciplines of ONMedU Protocol No. 1 dated 08/29/2025

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Nataliya FIZOR



*Reviewed and approved at the meeting of the Department* \_\_\_\_\_

*Protocol No. of « « 20*

*Head of Department* \_\_\_\_\_

*Reviewed and approved at the meeting of the Department* \_\_\_\_\_

*Minutes No. of « « 20*

*Head of Department* \_\_\_\_\_

## 1. Description of the discipline:

Name of indicators	Field of knowledge, specialty, specialization, level of higher education	Characteristics of the academic discipline	
The total number of:  Credits: 3  Hours: 90	Field of knowledge 22 "Health care"	<i>Full-time education</i> <i>Mandatory discipline</i>	
	Specialty 226 "Pharmacy.	<i>Year of training:</i>	<i>4</i>
	Industrial pharmacy"	<i>Semester</i>	<i>VII</i>
	Specialization 226.01 "Pharmacy"	<i>Lectures</i>	<i>20 hours</i>
	Level of higher education second (master's)	<i>Practical classes</i>	<i>40 hours</i>
		<i>Individual work</i>	<i>30 hours</i>
		<i>The form of the final control is</i>	<i>Differential test</i>

## 2. The purpose and tasks of the educational discipline, competences, program learning outcomes.

**The purpose of the discipline:** is the formation of a future specialist in pharmacy knowledge of the basic symptoms and syndromes, methods of diagnosis and principles of drug therapy of the most common human diseases.

**The main tasks of the study of the discipline "Pharmacotherapy with the basics of pharmacokinetics":** are acquaintance with the basic principles of medical ethics and deontology, standards of behavior of a pharmacist in the clinic, the relationship between the pharmacist and the doctor; familiarization with the basic types of medical records; mastering the main methods of clinical examination of patients, methods of laboratory and instrumental examination of patients; study of the etiopathogenetic features of the most common human diseases; mastering general syndromology and clinical symptomology of the most common diseases in the internal medicine clinic; study of general principles of pharmacotherapy of the most common diseases of internal organs; mastering the general methodology and principles for choosing medicines for effective and safe pharmacotherapy, taking into account the patient's individual condition and pharmacological features; mastering the principles of evaluating the effectiveness and safety of the use of medicines during pharmacotherapy.

**The process of studying the discipline is aimed at forming elements of the following competencies:**

### General (GC):

GC01. Ability to think abstractly, analyze and synthesize, learn and be modernly educated.

GC02. Knowledge and understanding of the subject area and understanding of professional activity.

GC03. Ability to communicate in the national language both orally and in writing.

GC04. The ability to communicate in a foreign language (mainly English) at a level that ensures effective professional activity.

GC05. The ability to evaluate and ensure the quality of the work performed.

GC06. Ability to work in a team.

GC07. The ability to realize one's rights and responsibilities as a member of society; to realize the values of a civil (free democratic) society and the need for its sustainable development, the rule of law, the rights and freedoms of a person and a citizen in Ukraine.

GC08. The ability to preserve and multiply moral, cultural, scientific values and achievements of society based on an understanding of 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 technologies, to use various types and forms of motor activity for active recreation and leading a healthy lifestyle.

GC09. Ability to use information and communication technologies.

GC10. The ability to make decisions and act in accordance with the principle of inadmissibility of corruption and any manifestations of dishonesty

#### **Professional, special (PC):**

PC01. Ability to integrate knowledge and solve complex pharmacy problems in broad or multidisciplinary contexts.

PC02. The ability to collect, interpret and apply data necessary for professional activity, research and implementation of innovative projects in the field of pharmacy.

PC03. Ability to solve pharmacy problems in new or unfamiliar environments in the presence of incomplete or limited information, taking into account aspects of social and ethical responsibility.

PC04. The ability to clearly and unambiguously convey one's own knowledge, conclusions and arguments in the field of pharmacy to specialists and non-specialists, in particular to people who are studying.

PC07. The ability to carry out sanitary and educational work among the population for the purpose of prevention of common diseases, prevention of dangerous infectious, viral and parasitic diseases, as well as for the purpose of promoting timely detection and support of adherence to the treatment of these diseases according to their medico-biological characteristics and microbiological features.

PC09. Ability to provide pre-medical assistance to the sick and injured in extreme situations and emergencies.

#### **Program learning outcomes (PLO):**

PLO01. Have and apply specialized conceptual knowledge in the field of pharmacy and related fields, taking into account modern scientific achievements.

PLO02. Critically understand scientific and applied problems in the field of pharmacy.

PLO03. Have specialized knowledge and skills/skills for solving professional problems and tasks, including for the purpose of further development of knowledge and procedures in the field of pharmacy.

PLO04. Communicate freely in the national and English languages orally and in writing to discuss professional problems and results of activities, presentation of scientific research and innovative projects.

PLO05. To assess and ensure the quality and efficiency of activities in the field of pharmacy.

PLO06. Develop and make effective decisions to solve complex/complex problems of pharmacy personally and based on the results of joint discussion; formulate the goals of one's own activity and the activity of the team, taking into account public and industrial interests, the general strategy and existing limitations, determine the optimal ways to achieve goals.

PLO10. To carry out sanitary and educational work among the population for the purpose of prevention and in case of outbreaks of dangerous infectious, viral and parasitic diseases.

PLO12. Provide pre-medical assistance to patients in emergency situations and victims in extreme situations.

PLO13. Record cases of side effects when using medicinal products of natural and synthetic origin; evaluate factors that can affect the processes of absorption, distribution, deposition, metabolism and excretion of drugs and are determined by the condition and characteristics of the human body and the pharmaceutical characteristics of drugs.

### **Expected results of studying for discipline:**

**As a result of studying the academic discipline, the higher education student must:**

**Know:**

- the principles of pharmacotherapy of major pathological conditions that develop as a result of therapeutic, surgical, gynecological, psychiatric, skin, eye, otolaryngological, dental, infectious, pediatric diseases that threaten the patient's life and require urgent or planned treatment;

- rules and methods of administration of medicinal substances, based on their properties and features of action;

- rules of pharmaceutical ethics and deontology, to solve a complex of problems connected with the relationship between the doctor and the patient, the patient and the doctor.

**Be able to:** - use knowledge of pharmacological effects, mechanism of action, pharmacokinetics of drugs, principles of their dosage for the effectiveness and safety of pharmacotherapy;

- to provide urgent pharmacotherapeutic help with dizziness, shock, collapse, attacks of bronchial asthma, myocardial infarction, poisoning, renal and hepatic colic, etc .;

- prepare reports for doctors about traditional and new medicines, methods of rational use.

### 3. Content of the discipline

**The program includes 2 content modules: 1) general principles of pharmacotherapy and pharmacokinetics and methods of clinical examination of patients; 2) applied aspects of application of pharmacotherapeutic methods of treatment of specific nosoforms.**

**Content module 1** enables students of the Faculty of Pharmacy to study the methodology of diagnosis, to familiarize themselves with the basic methods of clinical, laboratory, instrumental examination of patients, taking into account the knowledge of pharmacology, to adapt the study of pharmacokinetics of drugs in order to select their effective and safe regimen.

**Theme 1.** General methods of clinical examination of patients: subjective (questioning, complaints, anamnesis), physical (examination, palpation, percussion, auscultation). Medicinal, pharmaceutical deontology.

Diagnostic process diagram. Types of diagnosis. Significance of subjective and physical methods in diagnosis. Question: sequence, provision, basic provisions, meaning for the choice of pharmacotherapy. Anamnesis: definition, species. Medicinal, allergic history. Physical or objective methods of examination of patients: types, definitions, conditions of conducting. Overview: species, clinical significance. Palpation: species, familiarity with the technique. Percussion: types, technique of holding. Auscultation: types, technique, means for holding. The notion of medicinal, pharmaceutical ethics and deontology. Values for a pharmacist. Aspects of interaction pharmacist-patient, pharmacist-doctor, pharmacist-pharmacist.

**Theme 2.** General laboratory and functional-instrumental methods of research of patients.

The concept of paraclinical examination methods. Types of additional methods of examination of patients, their importance for pharmacotherapy. General and biochemical blood tests: basic parameters, conditional norms, clinical significance. General urinalysis: basic parameters, conditional norms, clinical significance. Bacteriological studies of biological environments.

Basic functional methods for studying the characteristics of external respiration: spirometry, pycnometry, clinical significance. Electrocardiography: recording technique, basic parameters, clinical significance. Endoscopic methods for the investigation of internal organs diseases. Ultrasonic research methods, clinical significance. X-ray methods for the study of patients.

**Theme 3.** The main pharmacokinetic parameters, their importance for the implementation of pharmacotherapy.

The concept of pharmacokinetics. Ways of drug administration: species, clinical significance. Absorption of drugs. Bioavailability, definition, clinical significance. The concept of bioequivalence. Transportation of medicines. Distribution of drugs in the body (binding to proteins, regional circulation, volume distribution, the concept of biotransformation, routes of withdrawal of drugs from the body.) Main pharmacokinetic parameters: constant of absorption rate, period of half absorption, time of reaching maximum concentration, time of half-withdrawal, Constant rate of elimination, constant rate of excretion, determination, value for the implementation of pharmacotherapy.

**Content module 2** allows students to plan the necessary pharmacotherapy for specific diseases, syndromes based on the study of etiology, pathogenesis, symptomatology of the most common problems of internal organs.

**Theme 4.** Basic principles of pharmacotherapy for arterial hypertension and arterial hypotension.

Etiology, pathogenesis of arterial hypertension. Types of hypertension: primary, secondary. Methods of diagnostics. Clinical symptoms. Principles of pharmacotherapy for arterial hypertension. The concept of hypertensive crises, definitions, principles of emergency care.

Arterial hypotension: concept, classification, etiology, pathogenesis, clinical symptoms, diagnostic methods, principles of pharmacotherapy. Concept about hypotensive states, principles of providing urgent care.

**Theme 5.** Basic principles of pharmacotherapy for coronary heart disease.

Epidemiology of ischemic heart disease (IHD). Risk factors. Clinical forms of IHD (angina pectoris, myocardial infarction, post-infarction atherosclerosis, sudden cardiac death syndrome). Basic directions of pharmacotherapy of coronary heart disease. The notion of basic antianginal drugs. Modern pharmaceutical forms of antianginal drugs (aerosols, transdermal, transbuccal).

**Theme 6.** Types of violations of heart rate and conduction, principles of pharmacotherapy. Heart failure: classification, principles of pharmacotherapy.

Electrophysiological functions of the heart. Types of cardiac rhythm and conduction disorders. Etiology, pathogenesis, diagnostic methods, clinical manifestations of the most common cardiac arrhythmias. Principles of pharmacotherapy.

Concept of mechanical functions of the heart. Heart failure, definition, classification. The main etiopathogenetic mechanisms of the formation and progression of heart failure. Methods of diagnosis, clinical symptoms, principles of pharmacotherapy.

**Theme 7.** Pharmacotherapeutic principles of treatment of infectious-inflammatory diseases of the upper and lower respiratory tract.

Diseases of the upper respiratory tract: acute respiratory infections, flu, tonsillitis, pharyngitis, laryngitis - etiology, pathogenesis, clinical symptoms, diagnostic methods, principles of pharmacotherapy.

Diseases of the lower respiratory tract: bronchitis, pneumonia, pleurites - etiology, pathogenesis, clinic, diagnostic methods, principles of treatment.

Lung tuberculosis and extrapulmonary localization: etiology, clinic, diagnosis, principles of pharmacotherapy.

**Theme 8.** Bronchial asthma: etiology, pathogenesis, classification, clinic, principles of treatment.

Bronchial asthma: definition, modern clinical classification, etiology, pathogenesis, clinical symptoms, methods of laboratory and functional diagnosis. Principles of treatment.

The concept of asthmatic status, the principles of providing urgent care.

**Theme 9.** Principles of pharmacotherapy of diseases of the esophagus, stomach.

Gastroesophageal reflux disease: etiology, pathogenesis, risk factors, clinic, diagnostic methods, treatment principles. Etiology, pathogenesis, clinical manifestations, methods of diagnosis of acute and chronic gastritis (type A, type B), directions of pharmacotherapy. Peptic ulcer of the stomach and duodenum: etiology (role of *Helicobacter pylori*), pathogenesis, diagnostic methods, directions of pharmacotherapy.

**Theme 10.** Principles of pharmacotherapy of diseases of the intestines.

Anatomical and physiological features of the functioning of the small and large intestines. Basic intestinal diseases: etiology, pathogenesis, clinical manifestations, diagnostic methods, principles of pharmacotherapy. Concept about dysbiosis, clinical and diagnostic principles of choice of pharmacotherapy.

**Topic 11.** Pharmacotherapy of diseases of the liver, gall bladder.

Etiology, pathogenesis, clinical manifestations, methods of diagnosis of acute and chronic hepatitis, directions of pharmacotherapy. Cirrhosis of the liver: etiology, pathogenesis, clinic, diagnostic methods, principles of treatment. Acute and chronic cholecystitis: etiology, pathogenesis, clinic, diagnostic methods, principles of treatment. Functional diseases of the gall bladder: methods of diagnosis and treatment.

**Topic 12.** Pharmacotherapy of diseases of the pancreas.

Features of the functions of the pancreas. Acute and chronic pancreatitis: etiology, pathogenesis, clinical manifestations, diagnostic methods, principles of pharmacotherapy.

**Topic 13.** Principles of pharmacotherapy for diseases of the kidneys and urinary system.

Anatomical and physiological features of the kidneys and urinary system. Etiology, pathogenesis, symptoms and syndromes in diseases of the urinary system and kidneys. Methods of diagnostics. Principles of treatment. Acute and chronic pyelonephritis, acute and chronic glomerulonephritis, urolithiasis, acute and chronic cystitis.

**Theme 14.** Pharmacotherapy of joint and connective tissue diseases.**Theme 15.** Pharmacotherapy of allergic diseases.**Theme 16.** Diseases of the blood system: classification, diagnosis, principles of pharmacotherapy.

Anemia: classification, etiology, pathogenesis, clinical manifestations, diagnostic methods, principles of treatment. Leukemia: classification, etiology, pathogenesis, clinic, diagnostic methods, treatment principles. The place and role of general blood tests in diagnosing major diseases of the blood system. The concept of chemotherapy of malignant diseases of the blood system.

**Theme 17.** Pharmacotherapy of homeostasis disorders (water-electrolyte balance, acid-base balance).**Theme 18.** Diabetes mellitus: classification, diagnosis, principles of pharmacotherapy.

Diabetes mellitus type 1 and 2: etiology, pathogenesis, clinical manifestations, diagnostic methods, differentiated choice of pharmacotherapy. Diabetic coma: concept, classification. Hyperglycemic coma: pathogenesis, principles of treatment. Hypoglycemic coma: pathogenesis, principles of treatment.

**Theme 19.** Basic principles of pharmacotherapy of infectious diseases. Complications of antimicrobial therapy, their prevention and treatment.

General principles of antimicrobial therapy. An algorithm for selecting a specific patient for an antibacterial drug. Concept about etiology and pathogenesis of infectious diseases. General complications of antimicrobial therapy, methods of detection, prevention and treatment.

**Differential test.**

#### 4. Structure of studying discipline

Name of sections and topics of discipline	Amount of hours					
	Full-time study					
	In all	Including				
Lectures		Practical classes	Lab	Ind	IWS	
<b>Content module 1</b>						
Topic 1. General methods of clinical examination of patients: subjective (questioning, complaints, anamnesis), physical (examination, palpation, percussion, auscultation). Medicinal, pharmaceutical deontology.	6	2	2	-	-	2
Topic 2. General laboratory and functional-instrumental methods of research of patients.	4	-	2	-	-	2
Topic 3. The main pharmacokinetic parameters, their importance for the implementation of pharmacotherapy.	6	2	2	-	-	2
In all in content module 1	16	4	6			6
<b>Content module 2</b>						
Topic 4. Basic principles of pharmacotherapy of arterial hypertension and arterial hypotension.	5	2	2	-	-	1
Topic 5. Basic principles of pharmacotherapy of coronary heart disease.	5	2	2	-	-	1
Topic 6. Types of violations of heart rate and conduction, principles of pharmacotherapy. Heart failure: classification, principles of pharmacotherapy.	3	2	2	-	-	1
Topic 7. Pharmacotherapeutic principles of treatment of infectious-inflammatory diseases of the upper and lower respiratory tract.	5	2	2	-	-	1
Topic 8. Bronchial asthma: etiology, pathogenesis, classification, clinic, principles of treatment.	4	-	2	-	-	2
Topic 9. Principles of pharmacotherapy of diseases of the esophagus, stomach.	5	2	2	-	-	1

pic 10. Principles of pharmacotherapy of diseases of the intestines.	3	-	2	-	-	1
pic 11. Pharmacotherapy of diseases of the liver, bladder.	4	-	2	-	-	2
pic 12. Pharmacotherapy of diseases of the pancreas.	3	-	2	-	-	1
pic 13. Principles of pharmacotherapy for diseases of the kidneys and urinary system.	4	-	2	-	-	2
pic 14. Pharmacotherapy of joint and connective tissue diseases.	5	2	2	-	-	1
pic 15. Pharmacotherapy of allergic diseases.	4	-	2	-	-	2
Topic 16. Diseases of the blood system: classification, diagnosis, principles of pharmacotherapy.	4	-	2	-	-	2
pic 17. Pharmacotherapy of homeostasis disorders (water-electrolyte balance, acid-base balance).	5	2	2	-	-	1
pic 18. Diabetes mellitus: classification, diagnosis, principles of pharmacotherapy.	4	-	2	-	-	2
pic 19. Basic principles of pharmacotherapy of infectious diseases. Complications of antimicrobial therapy, their prevention and treatment.	5	2	2	-	-	1
Final lesson on the subject "Pharmacotherapy with the basics of pharmacokinetics" - differential test	4	-	2	-	-	2
In all in content module 2	74	16	34	-	-	24
In all hours in discipline	90	20	40	-	-	30

## 5. TOPICS OF LECTURES / SEMINARS / PRACTICAL / LABORATORY CLASSES

### 5.1. Full-time form of education

#### 5.1.1. Topics of lectures

<b>№</b>	<b>Theme</b>	<b>Amount of hours</b>
1.	Pharmacotherapy: content and basic principles of discipline, its relationship with other medical and pharmaceutical disciplines The purpose and objectives of the pharmacist in the implementation of pharmacotherapy. Types of pharmacotherapy.	2

2.	Pharmacokinetics: definition, basic principles, sections. Value for the pharmacist and in the implementation of pharmacotherapy.	2
3.	Pharmacotherapy of diseases of the cardiovascular system.	2
4.	Principles of pharmacotherapy of respiratory diseases.	2
5.	Principles of pharmacotherapy of diseases of the digestive system	2
6.	Principles of pharmacotherapy of metabolic disorders.	2
7.	Principles of pharmacotherapy of diseases of the nervous system.	2
8.	Principles of pharmacotherapy of diseases of the oral cavity.	2
9.	Principles of pharmacotherapy of ophthalmic diseases.	2
10.	Principles of etiotropic pharmacotherapy of infectious diseases.	2
	In all	<b>20</b>

### 5.1.2. Topics of seminar classes - seminars are not provided.

### 5.1.3. Topics of practical classes

<b>№</b>	<b>Theme</b>	<b>Amount of hours</b>
1.	General methods of clinical examination of patients: subjective (questioning, complaints, anamnesis), physical (examination, palpation, percussion, auscultation). Medicinal, pharmaceutical deontology.	2
2.	General laboratory and functional-instrumental methods of research of patients.	2
3.	The main pharmacokinetic parameters, their importance for the implementation of pharmacotherapy.	2
4.	Basic principles of pharmacotherapy for arterial hypertension and arterial hypotension.	2
5.	Basic principles of pharmacotherapy for coronary heart disease.	2
6.	Types of violations of heart rate and conduction, principles of	2

	pharmacotherapy. Heart failure: classification, principles of pharmacotherapy.	
7.	Pharmacotherapeutic principles of treatment of infectious-inflammatory diseases of the upper and lower respiratory tract.	2
8.	Bronchial asthma: etiology, pathogenesis, classification, clinic, principles of treatment.	2
9.	Principles of pharmacotherapy of diseases of the esophagus, stomach, intestines.	2
10.	Principles of pharmacotherapy of diseases of the intestines.	2
11.	Pharmacotherapy of diseases of the liver, gall bladder, pancreas.	2
12.	Pharmacotherapy of diseases of the pancreas.	2
13.	Principles of pharmacotherapy for diseases of the kidneys and urinary system.	2
14.	Pharmacotherapy of joint and connective tissue diseases.	2
15.	Pharmacotherapy of allergic diseases.	2
16.	Diseases of the blood system: classification, diagnosis, principles of pharmacotherapy.	2
17.	Pharmacotherapy of homeostasis disorders (water-electrolyte balance, acid-base balance).	2
18.	Diabetes mellitus: classification, diagnosis, principles of pharmacotherapy.	2
19.	Basic principles of pharmacotherapy of infectious diseases. Complications of antimicrobial therapy, their prevention and treatment.	2
20.	Differential test.	2
	<b>In all</b>	<b>40</b>

**5.1.4. Topics of laboratory classes - laboratory classes are not provided.**

## **6. INDEPENDENT WORK OF A HIGHER EDUCATION STUDENT**

### 6.1. Full-time form of education

№	Title of the topic / types of tasks	Amount of hours
1.	Training for practical classes - theoretical training.  Working on topics that are not included in the classroom practical classes:  - Pharmacotherapy: content and basic principles of discipline, its interconnection with other medical ones and pharmaceutical disciplines. Purpose and the task of the pharmacist in the implementation of effective and safety pharmacotherapy. Types of pharmacotherapy.  - Legislative basis of the pharmacist's activity that are providing an effective and safety pharmacotherapy. General principles of medical treatment.  Algorithm of choice of pharmacotherapy.  - Side effects of medicines. Polypragmatism	28
2.	Training for a differential test.	2
	<b>In all</b>	<b>30</b>

## 7. FORMS AND METHODS OF TEACHING

### Forms of teaching:

The discipline is taught in the form of lectures, practical classes; organization of independent work of the applicant.

### Methods of teaching:

Practical classes: conversation, role-playing games, solving situational problems, solving test problems.

Independent work: independent work with the textbook, independent work with the recommended basic and additional literature, with electronic information resources, independent solving of clinical problems.

## 8. FORMS OF CONTROL AND CRITERIA FOR ASSESSING LEARNING RESULTS

**Forms of current control:** oral interview, testing, assessment of practical skills, assessment of communication skills during a role-playing game, solving situational problems, assessment of

activity in the lesson.

**Form of final control:** differential test.

### **Criteria for assessing the learning outcomes of higher education applicants during current control**

#### **Evaluation criteria**

"5" The applicant actively participates in the discussion of the most difficult questions on the topic of the lesson, gives at least 90% correct answers to standardized test tasks, answers written tasks without errors, performs practical work and draws up a protocol.

"4" The applicant participates in the discussion of the most difficult questions on the topic, gives at least 75% correct answers to standardized test tasks, makes some minor mistakes in the answers to written tasks, performs practical work and draws up a protocol.

"3" The applicant participates in the discussion of the most difficult questions on the topic, gives at least 60% correct answers to standardized test tasks, makes significant mistakes in answers to written tasks, performs practical work and draws up a protocol.

"2" The applicant does not participate in the discussion of complex questions on the topic, gives less than 60% correct answers to standardized test tasks, makes gross mistakes in answers to written tasks or does not give answers to them at all, does not perform practical work and does not draw up a protocol.

Only those applicants who have fulfilled the requirements of the curriculum in the discipline, have no academic debt, and their average score for current academic activity in the discipline is at least 3.00 are allowed to take the final control in the form of differential test.

Only those applicants who have fulfilled the requirements of the curriculum in the discipline, have no academic debt and their average score for current academic activity in the discipline is not less than 3.00 are allowed to take the final control in the form of a differentiated test.

The differentiated test is carried out: in the last lesson (the lesson is distinguished as a separate control measure) after the end of classes before the start of the examination session - in the case of a tape system of study, in the last lesson of the educational component - in the case of a cyclical system of study.

The methodology for conducting the final (semester) control of the educational component in the form of a differentiated test is unified and involves the use of standardized forms.

### **Criteria for evaluating the results of the students' training during final control – differential test**

#### **Evaluation criteria**

Excellent "5" The applicant worked systematically during the semester, showed versatile and deep knowledge of the program material during the exam, is able to successfully perform the tasks provided for in the program, mastered the content of the main and additional literature, realized the interrelationship of individual sections of the discipline, their importance for the future profession, showed creative abilities in understanding and using educational program material, showed the ability to independently update and replenish knowledge; the level of competence is high (creative);

Good "4" The applicant has demonstrated full knowledge of the educational program material,

successfully performs the tasks provided for by the program, has mastered the basic literature recommended by the program, has shown a sufficient level of knowledge in the discipline and is capable of their independent updating and renewal in the course of further training and professional activity; the level of competence is sufficient (constructive and variable)

Satisfactory "3" The applicant who demonstrated knowledge of the main curriculum material in the amount necessary for further education and subsequent work in the profession, copes with the tasks provided for by the program, made some mistakes in the answers on the exam and when completing the exam tasks, but has the necessary knowledge to overcome mistakes made under the guidance of a scientific and pedagogical worker; level of competence - average (reproductive)

Unsatisfactory "2" The applicant did not demonstrate sufficient knowledge of the main educational program material, made fundamental mistakes in the performance of tasks provided for by the program, cannot use the knowledge in further studies without the help of a teacher, did not manage to master the skills of independent work; the level of competence is low (receptive-productive)

### **9. Distribution of points received by applicants for higher education**

The obtained average score for the academic discipline for applicants who have successfully mastered the work program of the academic discipline is converted from a traditional four-point scale to points on a 200-point scale, as shown in the table:

Conversion table of a traditional assessment into a multi-point scale

Traditional four-point scale Multi-point 200-point scale

Excellent ("5") 185 - 200

Good ("4") 151 - 184

Satisfactory ("3") 120-150

Unsatisfactory ("2") Below 120

A multi-point scale (200-point scale) characterizes the actual success rate of each applicant in mastering the educational component. The conversion of the traditional grade (average score for the academic discipline) into a 200-point grade is performed by the information and technical department of the University.

According to the obtained points on a 200-point scale, the achievements of the applicants are evaluated according to the ECTS rating scale. Further ranking according to the ECTS rating scale allows you to evaluate the achievements of students from the educational component who are studying in the same course of the same specialty, according to the points they received.

The ECTS scale is a relative-comparative rating, which establishes the applicant's belonging to the group of better or worse among the reference group of fellow students (faculty, specialty). An "A" grade on the ECTS scale cannot be equal to an "excellent" grade, a "B" grade to a "good" grade, etc. When converting from a multi-point scale, the limits of grades "A", "B", "C", "D", "E" according to the ECTS scale do not coincide with the limits of grades "5", "4", "3" according to the traditional scale. Acquirers who have received grades of "FX" and "F" ("2") are not included in the list of ranked acquirers. The grade "FX" is awarded to students who have obtained the minimum number of points for the current learning activity, but who have not passed the final examination. A grade of "F" is assigned to students who have attended all

classes in the discipline, but have not achieved a grade point average (3.00) for the current academic activity and are not admitted to the final examination.

Applicants who study in one course (one specialty), based on the number of points scored in the discipline, are ranked on the ECTS scale as follows:

Conversion of the traditional grade from the discipline and the sum of points on the ECTS scale

Evaluation on the ECTS scale Statistical indicator

A The best 10% of achievers

B The next 25% of applicants

C The next 30% of applicants

D The next 25% of earners

E The next 10% of earners

## **10. METHODOLOGICAL SUPPORT**

- Syllabus of the academic discipline
- Working program of the academic discipline
- Methodological recommendations for lectures
- Methodological recommendations for practical classes
- Methodological recommendations for independent work of higher education applicants
- Multimedia presentations
- Illustrative materials
- Situational tasks
- Database of test tasks

## **11. List of questions for the differential test**

1. Subject, content and basic principles of pharmacotherapy, types of pharmacotherapy.
2. The basic clinical methods of examination of the patient and their importance for the pharmacist.
3. General knowledge about etiology, pathogenesis, symptoms and syndromes of the disease and their significance for pharmacotherapy.
4. Theory and practice of the diagnostic process. Types of diagnosis and rules its design, the importance of choosing mono- or combination therapy.
5. An algorithm for choosing a pharmacotherapy for a particular patient.
6. The main legislative documents on the provision of medicinal products and their importance for the pharmacist.

7. Subjective methods of examination of patients.
8. Physical methods of examination of patients.
9. Types of laboratory and instrumental methods of examination of patients and their significance.
10. The history of the patient, species, significance for the implementation of effective and safety of pharmacotherapy.
11. General examination of the patient, method of implementation, clinical significance for pharmacotherapy.
12. Palpation of the heart and peripheral vessels, clinical significance. Significance at implementation of pharmacotherapy. Key features of the pulse.
13. Technique, methods, diagnostic value of measurement of arterial pressure and its role in the implementation of pharmacotherapy.
14. Methods of endoscopic examination in gastroenterology and their clinical and pharmacotherapeutic value.
15. General analysis of urine, clinical significance in diseases of the kidneys and other organs and systems. Place of study in conducting differentiated therapy
16. Anthropometric study of man, methods, clinical significance for pharmacotherapy.
17. Thermometry of the body, technique, clinical significance in the choice and conducting of pharmacotherapy.
18. Fever, degree of body temperature, types of fever. Pharmacotherapeutic approaches of treatment.
19. The main complaints, symptoms in diseases of the circulatory system and their importance in choosing a pharmacotherapy.
20. Instrumental methods of examination of circulatory organs and their clinical significance for pharmacotherapy.
21. Ischemic heart disease, etiology, pathogenesis, principles of pharmacotherapy.
22. Arterial hypertension, classification, pathogenetic approaches to medical treatment.
23. Arterial hypotension. Principles of pharmacotherapy of hypotensive states.
24. Acute and chronic heart failure, etiology, pathogenesis, principles of treatment.
25. The most frequent violations of heart rhythm and conduction, etiology, pathogenesis, diagnostics. Principles of their pharmacotherapy.
26. Pharmacotherapeutic approaches to treatment of tachycardial disorders of heart rate.
27. Pharmacotherapeutic approaches to the treatment of bradyarrhythmias.
28. Principles of pharmacotherapy of hypertensive crises, hypotensive states, angina attack, myocardial infarction.

29. Principles of pharmacotherapy for cardiac asthma, pulmonary edema, paroxysmal tachycardia.
30. Basic complaints, symptoms in diseases of the respiratory organs and their place in the implementation of pharmacotherapy.
31. Laboratory-instrumental methods of research of patients with pathology of respiratory organs and their clinical significance for pharmacotherapy.
32. Pneumonia: modern classification as the basis of effective pharmacotherapy.
33. Acute and chronic bronchitis, etiology, pathogenesis, principles of pharmacotherapy.
34. Pleurites, etiology, pathogenesis, diagnostics, pharmacotherapeutic approaches.
35. Bronchial asthma, etiology, pathogenesis, classification, principles of treatment.
36. Pharmacotherapeutic tactics with asthmatic status.
37. Tuberculosis: etiology, pathogenesis, clinical classification. Methods of pharmacotherapy.
38. Main complaints, symptoms and syndromes in diseases of the digestive system and their significance in the choice of pharmacotherapy.
39. Value in the choice of pharmacotherapy of additional instrumental investigations of the digestive system.
40. Gastritis: etiology, pathogenesis, diagnostics, principles of pharmacotherapy.
41. Ulcer disease of the stomach and duodenum: etiology, pathogenesis, diagnostics, principles of medical treatment.
42. Diseases of the small and large intestine, the principles of pharmacotherapy.
43. Liver diseases: etiology, pathogenesis, classification, diagnostic methods.
44. Basic pharmacotherapeutic principles of treatment of liver diseases.
45. Illness of the gallbladder and biliary tract, diagnostics, the principles of medical treatment.
46. Diseases of the pancreas: etiology, pathogenesis, diagnostics. Principles of pharmacotherapy of acute and chronic pancreatitis.
47. The main symptoms and syndromes in diseases of the kidneys and urinary tract and their significance in the choice of pharmacotherapy.
48. Laboratory and instrumental methods for the study of the kidneys and their role in implementation of pharmacotherapy.
49. Glomerulonephritis: general principles of pharmacological treatment.
50. Pyelonephritis: general principles of medical treatment.
51. Ren stone disease, principles of diet and pharmacotherapy.

52. Value of general analysis of blood in diagnostics and medical therapy of the main diseases of the blood system.
53. Anemia: classification, diagnosis, principles of pharmacotherapy.
54. Leukemia: classification, diagnosis, principles of medical treatment.
55. Modern ideas about the possibilities of diagnosing connective tissue diseases and diseases of joints. Major groups of medicines.
56. Principal pharmacotherapeutic approaches to the treatment of pathology of connective tissue and joints.
57. Water and electrolyte exchange: etiology, diagnostics, principles of pharmacological treatment.
58. Violations of acid-alkaline equilibrium: etiology, pathogenesis, principles of pharmacotherapy.
59. Diabetes mellitus: etiology, pathogenesis, diagnosis, complications of disease. Modern pharmacological medicines.
60. Pharmacotherapeutic principles of treatment of diabetes mellitus and its complications.

## 12. Recommended literature:

### Basic:

- 1) Betram G Katzung Basic and Clinical Pharmacology, 14th Edition. - McGraw-Hill Medical, 2018.- 1235 p.
- 2) Godovan V.V. Pharmacology in pictures and schemes. – Nova Knyha, 2021. - 464 p.
- 3) T.R.Harrison and others Harrison's principles of internal medicine, 19 th edition (Vols 1&2). – McGraw Hill education, 2015. – 3983 p.
- 4) Craham Douglas, Fiona Nicol, Colin Robertson Macleod's clinical Examination, 13 th edition. – Churchill Livingstone, 2013. – 471 p.

### Additional:

- 1) Emergency management of internal diseases / Edited by O.Babak and O.Bilovol. – Kyiv: AUS Medicine Publishing, 2010. – 448 p.
- 2) Educational and methodical manual for practical classes in pharmacotherapy with the basics of pharmacokinetics for the students of the 4<sup>th</sup> course of the pharmaceutical faculty / Ya.V.Rozhkovsky, S.B.Strechen, I.V.Bazalieieva, K.F.Shemonaeva, G.O.Poludenko. – Odessa, 2025. - 760 p.
- 3) Клініко-фармакологічний глосарій: навч. посібник / В.Й.Кресюн, В.В.Годован, С.Б.Стречень. – Одеса: ОНМедУ, 2015. – 328 с.

## 13. Electronic information resources:

1. Resources for predicting inter-drug interactions (based on FDA instructions, in English) URL: <http://www.drugs.com>
2. Resource-Directory of Medicines and Forecasting of Intercurricular Interactions (in English). URL: <http://www.medscape.org>
3. Interregional Society of Evidence-Based Medicine: <http://www.osdm.org/index.php>