

MINISTRY OF HEALTH OF UKRAINE

Odesa National Medical University

Department of General and clinical pharmacology with the pharmacognosy



APPROVED

Deputy rector for scientific and pedagogical activity

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WORKING PROGRAM OF EDUCATIONAL DISCIPLINE

“CLINICAL PHARMACOLOGY”

(Full-time education)

Level of higher education: second (master's)

Field of knowledge: 22 "Health care"

Specialty: 221 "Stomatology"

Educational and professional program: "Stomatology"

2023

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 Content modules: 2	Field of knowledge 22 "Health care"	<i>Full-time education</i>		
		<i>Elective discipline</i>		
	Specialty 221 "Stomatology"	<i>Year of training:</i>	<i>4</i>	
		<i>Semester</i>	<i>VIII</i>	
		<i>Lectures</i>	<i>0 hours</i>	
		<i>Practical classes</i>	<i>30 hours</i>	
		<i>Individual work</i>	<i>60 hours</i>	
		<i>including individual tasks</i>	<i>0 hours</i>	
Level of higher education second (master's)	<i>The form of the final control is</i>	<i>Test</i>		

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

The purpose of the discipline: is the training of specialists who have a sufficient amount of theoretical knowledge and practical skills to conduct the most rational therapeutic therapy in a particular patient, have a methodology for selecting the most effective and safe medicines, as well as their combinations, taking into account the individual characteristics of the organism, the course and form of the disease, the presence of concomitant pathology, based on evidence-based medicine.

The main tasks of the study of the discipline "Clinical Pharmacology": to provide students with theoretical knowledge on the determination of the group membership of medicinal products, their pharmacokinetics, pharmacodynamics, manifestations of possible adverse reactions, symptoms of overdose, preventative measures and promote the elimination of adverse reactions, indications for appointment and interaction with other liqueurs and acquiring practical skills, in particular providing the necessary standard pharmacotherapeutic care with the most commonly used urgent conditions.

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

Integral competence: The ability to solve typical and complex problems, including those of a research and innovation nature in the field of medicine. Ability to continue learning with a high degree of autonomy.

General competences:

- GC1. Ability to abstract thinking, analysis and synthesis
- GC2. Ability to learn and master modern knowledge
- GC3. Ability to apply knowledge in practical situations
- GC4. Knowledge and understanding of the subject area and understanding of professional activity
- GC5. Ability to adapt and act in a new situation
- GC6. Ability to make informed decisions
- GC7. Ability to work in a team
- GC8. Ability to interpersonal interaction
- GC9. Ability to communicate in a foreign language
- GC10. Ability to use information and communication technologies
- GC11. Ability to search, process and analyze information from various sources
- GC12. Determination and persistence in relation to assigned tasks and assumed responsibilities
- GC13. Awareness of equal opportunities and gender issues
- GC14. The ability to realize one's rights and responsibilities as a member of society, to be aware of the values of a public (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
- GC15. 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 technology, to use various types and forms of motor activity for active recreation and leading a healthy lifestyle
- GC16. The ability to evaluate and ensure the quality of the work performed
- GC17. The desire to preserve the environment

Special (professional, subject) competences:

- SC1. Ability to collect medical information about the patient and analyze clinical data
- SC2. Ability to determine the necessary list of laboratory and instrumental studies and evaluate their results
- SC3. Ability to establish a preliminary and clinical diagnosis of the disease

SC4. The ability to determine the necessary regime of work and rest in the treatment and prevention of diseases

SC5. The ability to determine the nature of nutrition in the treatment and prevention of diseases

SC6. Ability to determine the principles and nature of treatment and prevention of diseases

SC7. Ability to diagnose emergency conditions

SC8. Ability to determine tactics and provide emergency medical aid SK10. Ability to perform medical manipulations

SC11. Ability to solve medical problems in new or unfamiliar environments in the presence of incomplete or limited information, taking into account aspects of social and ethical responsibility

SC13. Ability to carry out sanitary and hygienic and preventive measures SK17. The ability to assess the impact of the environment, socio-economic and biological determinants on the state of health of an individual, family, population

SC25. Adherence to professional and academic integrity, to be responsible for the reliability of the obtained scientific results

Program learning outcomes:

PLO1. Have thorough knowledge of the structure of professional activity. To be able to carry out professional activities that require updating and integration of knowledge. To be responsible for professional development, the ability for further professional training with a high level of autonomy.

PLO4. Identify and identify leading clinical symptoms and syndromes (according to list 1); according to standard methods, using preliminary data of the patient's history, data of the patient's examination, knowledge about the person, his organs and systems, establish a preliminary clinical diagnosis of the disease (according to list 2).

PLO5. Collect complaints, history of life and diseases, evaluate psychomotor and physical development of the patient, state of organs and systems of the body, based on the results of laboratory and instrumental studies, evaluate information regarding the diagnosis (according to list 4), taking into account the age of the patient.

PLO6. Establish the final clinical diagnosis by making a reasoned decision and analyzing the received subjective and objective data of clinical, additional examination, differential diagnosis, observing the relevant ethical and legal norms, under the control of the head physician in the conditions of the health care institution (according to list 2).

PLO7. Assign and analyze additional (mandatory and optional) examination methods (laboratory, functional and/or instrumental) (according to list 4), patients with diseases of organs and body systems for differential diagnosis of diseases (according to list 2).

PLO8. Determine the main clinical syndrome or symptom that determines the severity of the condition of the victim/injured (according to list 3) by making a reasoned decision about the person's condition under any circumstances (in the conditions of a health care facility, outside its boundaries), including in conditions of emergency and hostilities, in field conditions, in conditions of lack of information and limited time.

PLO9. Determine the nature and principles of treatment (conservative, operative) of patients with diseases (according to list 2), taking into account the age of the patient, in the conditions of the health care institution, outside its borders and at the stages of medical evacuation, including in field conditions, on the basis of a preliminary clinical diagnosis, observing relevant ethical and legal norms, by making a reasoned decision according to existing algorithms and standard schemes, in case of the need to expand the standard scheme, be able to substantiate personalized recommendations under the control of the head physician in the conditions of a medical institution.

PLO14. Determine tactics and provide emergency medical care in emergency situations (according to list 3) in limited time in accordance with existing clinical protocols and treatment standards.

PLO17. Perform medical manipulations (according to list 5) in the conditions of a medical institution, at home or at work based on a previous clinical diagnosis and/or indicators of the patient's condition by making a reasoned decision, observing the relevant ethical and legal norms.

PLO21. Search for the necessary information in the professional literature and databases of other sources, analyze, evaluate and apply this information. PRN22. Apply modern digital technologies, specialized software, and statistical data analysis methods to solve complex healthcare problems.

PLO23. Assess the impact of the environment on human health in order to assess the morbidity of the population.

PLO25. It is clear and unambiguous to convey one's own knowledge, conclusions and arguments on health care problems and related issues to specialists and non-specialists.

PLO27. Communicate freely in the state language and in English, both orally and in writing to discuss professional activities, research and projects.

PLO28. Make effective decisions about health care problems, evaluate the necessary resources, take into account social, economic and ethical consequences.

Expected results of studying for discipline:

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

Know:

- The main ways of pharmacological correction of diseases, dysfunctions of organs and systems.
- Nomenclature and classification of medicines.
- Pharmacological and pharmacotherapeutic characteristics of the main groups of drugs.
- Indications and contraindications for the use of medicines.
- Manifestations of possible adverse drug reactions, symptoms of overdose with potent and poisonous drugs, methods of their prevention and principles of treatment.

Be able:

- to write down and analyze recipes for medicinal products in different medical forms in accordance with the current legislation of Ukraine.
- to determine the group membership of medicinal products according to modern classifications;
- provide pharmacological and pharmacotherapeutic characteristics of drugs, logically link the mechanism of action with pharmacodynamics, pharmacodynamics with indications, and side effects with contraindications to their use;
- calculate a single dose of the drug depending on age, body weight or surface area of the patient's body;
- to determine, depending on the characteristics of the pharmacokinetics of medicinal products, the multiplicity of the administration of the medicinal product, its daily, course dose in patients of all ages in accordance with the concomitant diseases and the use of other drugs;
- to substantiate the appropriate dosage form according to the route of administration
- to predict the consequences of interaction of drugs with their combined administration, medicines and components of food, medicines and alcohol;
- evaluate the benefit / risk ratio when using medicines;
- to make judgments about the possibility of side effects of drugs in order to prevent them;

- to determine the manifestations of possible adverse reactions of drugs, symptoms of overdose with potent and poisonous drugs, methods of their prevention and treatment principles;
- to create an algorithm for patient assistance in acute drug poisoning with the use of antidotes in each particular case;
- to carry out the analysis of pharmacological information in modern reference books, scientific and professional periodicals;
- provide a comparative characteristic of drugs based on indicators of effectiveness, safety, mechanism of action, indications for use, etc .;
- provide rational pharmacotherapeutic assistance in the most common emergency situations found in stomatology.

To master the skills:

- Analysis of pharmacotherapeutic and clinical-pharmacological tasks.
- Prescription rules and the correctness of the prescription form.
- Learning and carrying out the simplest methods of examining the patient to control the effectiveness and safety of pharmacotherapy.
- Possession of information about modern standards and formularies for the treatment of dental diseases.

3. Content of the discipline

Subsection 1. General issues of clinical pharmacology.

Topic 1. Subject, problems of clinical pharmacology. Clinical pharmacodynamics, pharmacokinetics of drugs. Drug interactions: definition, types, features in dental practice. Side effect of medicines: prevention and treatment. Subject, tasks, goals of studying clinical pharmacology. Basic concepts of the discipline. Algorithm for the selection of drugs for a specific patient. Basic principles of pharmacodynamics, pharmacokinetics, pharmacotoxicodynamics of drugs. The concept of drug interaction, types, classification. Pharmaceutical, pharmacological (pharmacokinetic, pharmacodynamic, pharmacotoxicodynamic interaction of drugs). Types of side effects of drugs. Classification of side effects. The concept of polypharmacy. The system of pharmacological supervision of the safety of the use of drugs in the world and in Ukraine. Methods of controlling the effectiveness and safety of drug use. Methods of prevention and treatment of drug side effects.

Subsection 2. Applied aspects of clinical pharmacology.

Topic 2. Clinical and pharmacological characteristics of antianginal and antiischemic drugs. Clinical and pharmacological characteristics of drugs affecting vascular tone (antihypertensive and hypertensive). Etiopathogenetic principles of treatment of ischemic heart disease. Classification of antianginal drugs. Peculiarities of the choice and combined use of drugs (organic nitrates, beta-adrenergic blockers, calcium channel blockers, sydnonimins). Dosage regime. Indications and contraindications for appointment. Factors that reduce resistance to drugs of this group. Methods of evaluating the effectiveness and safety of application.

Principles of treatment of hypertension and symptomatic hypertension. Classification of antihypertensive drugs. Justification of the choice of the drug depending on the stage and degree of arterial hypertension and the type of hemodynamics. Characteristics of first- and second-line drugs. Dosage regime. Comparative characteristics of drugs, in terms of effectiveness, compatibility of drugs with different variants of the course and the presence of concomitant pathology. The choice of the drug and dosage regimen depending on age, presence of pregnancy. Assessment of effectiveness and safety of use. Principles of treatment of hypertensive crises.

Etiopathogenetic principles of arterial hypotension treatment. Classification of hypertensive drugs. Comparative characteristics of drugs, choice of drugs and dosage regime. Assessment of effectiveness and safety of use.

Topic 3. Clinical and pharmacological characteristics of antibacterial drugs and antiseptics. Principles of modern antibacterial therapy. Classification of antibiotics and other antimicrobial drugs. The role of antibiotics and other chemotherapeutic drugs in infectious and purulent-inflammatory diseases. The choice of antibacterial agents in accordance with the sensitivity of microorganisms and the localization of the process, the severity of the disease. Side effects and contraindications to antibacterial therapy. The choice of antimicrobial drugs depending on pharmacokinetics. Age characteristics of antibacterial therapy. Antibiotic resistance and ways to overcome it.

Topic 4. Clinical and pharmacological characteristics of anti-inflammatory drugs (non-steroidal and steroidal). Clinical and pharmacological characteristics of drugs for general and local anesthesia. Modern concepts of pathological physiology and pathological anatomy of inflammation. Classification of nonsteroidal anti-inflammatory drugs. Modern ideas about the mechanism of action. Comparative characteristics of the anti-inflammatory effect of drugs. Indications and

contraindications for use. Dosage regime. Side effects, their prevention and treatment.

Clinical and pharmacological classification of glucocorticosteroids. Schemes for prescribing glucocorticosteroids. Compatibility of drugs in the combined therapy of diseases. Side effect, methods of monitoring the effectiveness and safety of the use of steroid anti-inflammatory drugs.

The concept of narcosis and anesthesia. Basic biochemical, physiological, and pathophysiological principles of anesthetic use. Advantages and disadvantages of certain types of anesthesia. Classification of drugs for general and local anesthesia. Mechanisms of action, dosing principles, possible side effects.

Topic 5. Clinical and pharmacological characteristics of drugs affecting blood coagulation (fibrinolytics, anticoagulants, antiaggregants, coagulants) and lipid metabolism (hypolipidemic agents, drugs of metabolic type of action).

Control of practical skills and theoretical knowledge. Credit class.

Types of hemostasis disorders. Pharmacokinetics, pharmacodynamics of the main groups of drugs that inhibit and stimulate the hemostasis system. Classification of pro- and anticoagulants. Dosage principles. Peculiarities of application in dentistry. Side effects.

Etiopathogenetic principles of treatment of atherosclerosis. Classification of hypolipidemic drugs. Justification of the choice of the drug depending on the class of dyslipidemia. Dosage regime, interaction with other groups of drugs. Assessment of effectiveness and safety of use. Side effect of drugs.

Only students who do not have academic debt and have an average score for the current educational activity of at least 3.00 are admitted to the final certification. Final control should be standardized. The average score for the discipline (traditional assessment) is calculated as the arithmetic average of the current performance. The received grade for the discipline is considered as the percentage of assimilation of the required amount of knowledge from the selective discipline "Clinical Pharmacology".

Topic IWS 1. Clinical and pharmacological characteristics of cardiac glycosides and non-glycoside positive inotropic drugs, antiarrhythmic drugs.

Etiology and pathogenesis of acute and chronic heart failure. Modern principles of treatment of acute and chronic heart failure. Pharmacokinetics and pharmacodynamics of the main representatives of cardiac glycosides. The role and place of cardiac glycosides in complex therapy of heart failure. Dosage regime. Significance of ECG and echocardiography, clinical control during therapy with cardiac glyco-

sides. Peculiarities of differentiated use of cardiac glycosides and other drugs in chronic heart failure depending on the type of myocardial dysfunction. Intoxication by cardiac glycosides. Non-glycoside and synthetic cardiotonic drugs.

Electrophysiological mechanisms of various disorders of heart rhythm and conduction. Classification of antiarrhythmic drugs. Comparative characteristics of individual pharmacological groups. Peculiarities of the choice of drugs for the treatment of various types of arrhythmia and their preventive therapy. The role of agents affecting electrolyte metabolism, cardiac glycosides in the fight against arrhythmias. Dosage regime. Interaction of antiarrhythmic drugs with each other and with drugs of other pharmacological groups. Assessment of effectiveness and safety of use.

Topic IWS 2. Clinical and pharmacological characteristics of drugs affecting bronchial patency.

Modern ideas about the etiology and pathogenesis of bronchial obstruction syndrome. Classification of drugs affecting bronchial patency. Pharmacokinetics and pharmacodynamics. Dosage regime. Features of their combined use. Therapeutic effectiveness of beta-2-agonists, M-choline blockers, methylxanthines. The choice of bronchodilator drugs for the relief of an attack of bronchial asthma and the systematic therapy of COPD, including taking into account concomitant pathology. Comparative characteristics of their therapeutic value. Side effects of drugs, advantages and disadvantages of different pharmacological groups. Methods of evaluating the effectiveness and safety of therapy taking into account the degree of bronchial obstruction, sputum viscosity, and the state of central and peripheral hemodynamics.

Topic IWS 3. Clinical pharmacology of antiallergic drugs and drugs that suppress and stimulate immunity.

Concept of allergy. Types of allergic complications. Classification of antiallergic agents: antihistamines, stabilizers of mast cell membranes, drugs that reduce vascular permeability. Pharmacological effects, dosage principles. Side effects: methods of prevention and treatment. Methods of controlling the effectiveness and safety of application.

The concept of immunity. Classification of drugs that affect the immune response and body protection. Pharmacological effects, dosage principles. Side effects: methods of prevention and treatment. Methods of controlling the effectiveness and safety of application.

Topic IWS 4. Clinical pharmacology of drugs that affect the condition of

the central nervous system.

Classification of drugs affecting the functions of the central nervous system. Drugs that stimulate and suppress the function of the central nervous system. Features of clinical application. Dosage regime. Methods of controlling the effectiveness and safety of their application.

Topic IWS 5. Clinical and pharmacological characteristics of drugs affecting the functions of the gastrointestinal tract, hepatobiliary system and pancreas.

Determination of the principles of pharmacotherapy of gastric and duodenal ulcers, gastritis, colitis, irritable bowel syndrome, gastroesophageal reflux disease. The value of drugs affecting the secretory function of the stomach (proton pump inhibitors, H₂-histamine blockers, M-cholinergic blockers; secretory function stimulants). Antihelicobacter therapy (drugs, doses, duration). Gastrocytoprotectors. Medicinal regulation of motility of the gastrointestinal tract. The value of symptomatic agents: antiemetics and emetics, laxatives and antidiarrheals. Dosage regime. Modern principles of prevention and treatment of intestinal dysbiosis.

Modern principles of treatment of acute and chronic cholecystitis, hepatitis, pancreatitis. Justification of the choice and characteristics of preparations with enzymatic and anti-enzymatic properties. Peculiarities of simultaneous use of drugs. Pharmacokinetics and pharmacodynamics of cholagogues, cholekinetics, hepatoprotectors, antispasmodics. Indications and contraindications for appointment. Side effect. Dosage regime. Methods of controlling the effectiveness and safety of drug use.

Topic of IWS 6. Clinical and pharmacological characteristics of drugs used for the treatment of endocrine gland diseases.

Modern principles and approaches to the treatment of diseases of the thyroid gland, pituitary gland, hypothalamus, and adrenal glands. Selection and control of the effectiveness and safety of the use of appropriate drugs.

Diabetes mellitus: classification, pathogenesis, modern principles of pharmacotherapy and drug pharmacology.

Topic IWS 7. Preparation, writing, completion and defense of the "Drug Pharmacodynamics Research Protocol".

4. Structure of studying discipline

Name of content modules and topics	Number of hours					
	Full-time study					
	In all	Including				
Practical classes		IWS				
<i>Subsection 1. General issues of clinical pharmacology.</i>						
1. Subject, problems of clinical pharmacology. Clinical pharmacodynamics, pharmacokinetics of drugs. Drug interactions: definition, types, features in stomatological practice. Side effect of medicines: prevention and treatment.	8	6	2			
<i>Subsection 2. Applied aspects of clinical pharmacology.</i>						
2. Clinical and pharmacological characteristics of antianginal and antiischemic drugs. Clinical and pharmacological characteristics of drugs affecting vascular tone (antihypertensive and hypertensive).	10	6	4			
3. Clinical and pharmacological characteristics of antibacterial drugs and antiseptics.	10	6	4			
4. Clinical and pharmacological characteristics of anti-inflammatory drugs (non-steroidal and steroidal). Clinical and pharmacological characteristics of drugs for general and local anesthesia.	10	6	4			
5. Clinical and pharmacological characteristics of drugs affecting blood coagulation (fibrinolytics, anticoagulants, antiaggregants, coagulants) and lipid metabolism (hypolipidemic agents, drugs of metabolic type of action). Control of practical skills and theoretical knowledge. Credit class.	10	6	4			
6. Clinical and pharmacological characteristics of cardiac glycosides and non-glycoside	6	-	6			

positive inotropic drugs, antiarrhythmic drugs.						
7. Clinical and pharmacological characteristics of drugs affecting on bronchial patency.	6	-	6			
8. Clinical pharmacology of anti-allergic drugs and drugs that suppress and stimulate immunity.	6	-	6			
9. Clinical pharmacology of drugs that affect the condition of the central nervous system.	6	-	6			
10. Clinical and pharmacological characteristics of drugs affecting the functions of the gastrointestinal tract, hepatobiliary system and pancreas.	6	-	6			
11. Clinical and pharmacological characteristics of drugs used for the treatment of diseases of the endocrine glands.	6	-	6			
12. Preparation, writing, completion and protection of the "Drug Pharmacodynamics Research Protocol".	6	-	6			
In all:	90	30	60			

5. Topics of lectures/seminars/practical/laboratory classes

5.1. Topics of lectures - lectures are not provided

5.2. Topics of seminar classes - seminar classes are not provided

5.3. Topics of practical classes

№	Topic	Number of hours
1.	Subject, problems of clinical pharmacology. Clinical pharmacodynamics, pharmacokinetics of drugs. Drug interactions: definition, types, features in stomatological practice. Side effect of medicines: prevention and treatment.	6
2.	Clinical and pharmacological characteristics of antianginal and antiischemic drugs. Clinical and pharmacological characteristics of drugs affecting vascular tone (antihypertensive and hypertensive).	6
3.	Clinical and pharmacological characteristics of antibacterial drugs and antiseptics.	6
4.	Clinical and pharmacological characteristics of anti-inflammatory drugs (non-steroidal and steroidal). Clinical and pharmacological characteristics of drugs for general and local anesthesia.	6
5.	Clinical and pharmacological characteristics of drugs affecting blood	6

	coagulation (fibrinolytics, anticoagulants, antiaggregants, coagulants) and lipid metabolism (hypolipidemic agents, drugs of metabolic type of action). Control of practical skills and theoretical knowledge. Credit class.	
	In all	30

5.4. Topics of laboratory classes - laboratory classes are not provided

6. Independent work of students (IWS)

№	Topic	Number of hours
1.	Subject, problems of clinical pharmacology. Clinical pharmacodynamics, pharmacokinetics of drugs. Drug interactions: definition, types, features in stomatological practice. Side effect of medicines: prevention and treatment.	2
2.	Clinical and pharmacological characteristics of antianginal and antiischemic drugs. Clinical and pharmacological characteristics of drugs affecting vascular tone (antihypertensive and hypertensive).	4
3.	Clinical and pharmacological characteristics of antibacterial drugs and antiseptics.	4
4.	Clinical and pharmacological characteristics of anti-inflammatory drugs (non-steroidal and steroidal). Clinical and pharmacological characteristics of drugs for general and local anesthesia.	4
5.	Clinical and pharmacological characteristics of drugs affecting blood coagulation (fibrinolytics, anticoagulants, antiaggregants, coagulants) and lipid metabolism (hypolipidemic agents, drugs of metabolic type of action). Control of practical skills and theoretical knowledge. Credit class.	4
6.	Clinical and pharmacological characteristics of cardiac glycosides and non-glycoside positive inotropic drugs, antiarrhythmic drugs.	6
7.	Clinical and pharmacological characteristics of drugs affecting on bronchial patency.	6
8.	Clinical pharmacology of antiallergic drugs and drugs that suppress and stimulate immunity.	6
9.	Clinical pharmacology of drugs that affect the condition of the central nervous system.	6
10.	Clinical and pharmacological characteristics of drugs affecting the functions of the gastrointestinal tract, hepatobiliary system and pancreas.	6
11.	Clinical and pharmacological characteristics of drugs used for the treatment of diseases of the endocrine glands.	6
12.	Preparation, writing, completion and protection of the "Drug Pharmacodynamics Research Protocol".	6
	In all	60

7. Studing methods

Practical classes: conversation, solving clinical situational tasks, formation of professional skills and abilities in determining the general principles of prescribing

drugs and combined use of drugs, writing prescriptions, solving typical clinical-pharmacological and pharmacotherapeutic tasks and test tasks; analysis and evaluation of efficiency and safety criteria of mono- and combined pharmacotherapy in a specific patient.

Independent work: independent work with the textbook, independent work with a bank of test tasks in the discipline, independent solution of clinical-pharmacological and pharmacotherapeutic tasks.

8. Methods and forms of control and evaluation methods (including criteria for evaluating learning outcomes)

Current control: oral survey, testing, assessment of performance of practical skills, problem solving.

Final control: credit.

Evaluation of the current educational activity in a practical session:

1. Evaluation of theoretical knowledge on the subject of the lesson:

- methods: survey, solving a situational problem

- maximum score – 5, minimum score – 3, unsatisfactory score – 2.

2. Assessment of practical skills on the topic of the lesson:

- methods: assessment of the correctness of the performance of practical skills

- maximum score – 5, minimum score – 3, unsatisfactory score – 2.

The grade for one practical session is the arithmetic average of all components and can only have a whole value (5, 4, 3, 2), which is rounded according to the statistical method.

Current evaluation criteria in practical training

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.

Credit is given to the applicant who completed all tasks of the work program of the academic discipline, took an active part in practical classes, completed and defended an individual assignment and has an average current grade of at least 3.0 and has no academic debt.

Assessment is carried out: at the last lesson before the beginning of the examination session - with the tape system of learning, at the last lesson - with the cyclical system of learning. The credit score is the arithmetic mean of all components according to the traditional four-point scale and has a value that is rounded according to the statistics method with two decimal places after the decimal point.

9. Distribution of points received by students of 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. List of questions for test

1. Basic principles of clinical pharmacology.
2. Formulate the importance of leading pharmacokinetic characteristics in the individual selection of pharmacotherapy.
3. Clinical pharmacodynamics: definitions, basic principles and provisions.
4. Name the leading pathogenetic mechanisms of arterial hypertension, which are the object of the influence of antihypertensive drugs (drugs). Give examples of drugs.
5. Classification of hypotensive drugs.
6. Justify the differentiated choice of antihypertensive drugs for the treatment of hypertensive crises.
7. Classification of hypertensive drugs.
8. List the leading pathogenetic mechanisms of hypotensive conditions. Give examples of the choice of hypertensive drugs.
9. Clinical and pharmacological characteristics of adrenomimetics. Criteria of effectiveness and safety of their application.
10. Clinical and pharmacological classification of drugs that normalize heart rhythm and conduction disorders.
11. Justify the choice of pharmacotherapy for an attack of cardiac asthma and pulmonary edema.
12. Justify the choice of pharmacotherapy for the treatment of supraventricular and ventricular tachycardia heart rhythm disorders.
13. Classification of cardiac glycosides. Examples of cardiac glycosides that are widely used in clinical practice.
14. Cardiac and non-cardiac effects of cardiac glycosides.
15. Symptoms and mechanism of development of the toxic effect of cardiac glycosides.
16. Treatment of intoxication with cardiac glycosides.
17. Mechanisms of bronchospasm development. The choice of drugs for its treatment.
18. Justify the choice of drugs to eliminate bronchial obstruction by sputum. Effi-

ciency and safety criteria.

19. Justify the choice of drugs to eliminate edema of the mucous membrane of the bronchial tree. Efficiency and safety criteria.

20. Justify the choice of glucocorticosteroids for the treatment of bronchial obstruction syndrome.

21. Justify the choice of drugs to eliminate an attack of bronchial asthma.

22. Classification of antibiotics. Criteria that determine the choice of an antibiotic for an infectious process in dental practice.

23. Classification of penicillins. Clinical and pharmacological characteristics.

24. Aminoglycosides, classification, clinical and pharmacological characteristics, features of interaction with other drugs.

25. Features of pharmacodynamics and pharmacokinetics of lincomycin. Clinical application in dentistry.

26. Group of macrolides. Principles of clinical application, assessment of safety and efficacy.

27. Tetracyclines - classification, clinical and pharmacological characteristics, features of use.

28. Antibacterial therapy of pregnant women. Possibilities of using antibiotics and other antibacterial agents.

29. Classification of sulfonamides, mechanism of action, main drugs, doses, side effects, interaction with other drugs.

30. Nitrofurans, mechanism and spectrum of action, features of clinical application. Efficiency and safety criteria.

31. Nitroimidazoles, mechanism and spectrum of action, indications for use, efficiency and safety criteria.

32. Fluoroquinolones, mechanism and spectrum of action, indications for use, interaction with other antibacterial drugs, unwanted effects.

33. Classification of nonsteroidal anti-inflammatory drugs. Mechanism of action, unwanted effects.

34. Acetylsalicylic acid, features of the mechanism of action and clinical application. Dose-dependent effects. The issue of safety of therapy.

35. Clinical and pharmacological characteristics of pyrazolone derivatives, features of their interaction with other drugs and clinical application. Urgent indications for use.

36. Clinical and pharmacological classification of glucocorticosteroids, mechanism of action. Doses of drugs, indications for use. Peculiarities of the use of glucocorticosteroids in emergency situations.

37. The main unwanted effects of glucocorticosteroids, as well as absolute and relative contraindications to their use.

38. Clinical pharmacology of drugs used in disorders of the acid-peptic factor of the stomach and duodenum.

39. Enzyme and anti-enzyme drugs, clinical and pharmacological characteristics, features of differentiated use

40. Hepatoprotectors, classification, features of their purpose.
41. Principles of classification of psychotropic drugs. Clinical and pharmacological aspects of application in clinical practice.
42. Clinical and pharmacological classification of drugs for the treatment of acute and chronic allergic conditions.
43. Clinical pharmacology of H1-histamine blockers, features of use.
44. Types of side effects of drugs. Methods of prevention and treatment.
45. Classification and clinical and pharmacological characteristics of hemostatics, features of use in dental practice.
46. Modern laboratory methods of diagnosis of coronavirus infection: advantages, informativeness in the choice of pharmacotherapy.
47. The most common symptoms of the infectious and inflammatory process caused by the Covid-19 virus. Instrumental diagnostics.
48. Modern world and state protocols for providing medical care to patients with coronavirus infection, taking into account the main pathogenetic mechanisms of the disease.
49. The main groups of drugs for the pharmacotherapy of coronavirus infection and its complications, their clinical and pharmacological characteristics.
50. Immuno- and vaccine prevention of coronavirus infection. Types of vaccines. Their advantages and disadvantages.

**LIST OF PRACTICAL SKILLS, THE ACQUISITION OF WHICH IS
CONTROLLED DURING THE CREDIT CLASS "CLINICAL
PHARMACOLOGY"**

- I. Analysis of pharmacotherapeutic and clinical-pharmacological tasks.**
- II. Prescription rules and the correctness of the prescription form.**
- III. Control of learning and carrying out the simplest methods of examination of the patient.**

11. Methodological support:

- The working program of elective academic discipline
- Syllabus of elective academic discipline
- Textbooks:
 - Betram G Katzung Basic and Clinical Pharmacology, 14th Edition. - McGraw-Hill Medical, 2018.- 1235 p.
 - Clinical pharmacology: Manual for practical classes. – 2-nd edition / Edited by O.V.Kraydashenko. – Vinnytsya: Nova Khyna Publishers, 2010. – 192 p.
 - Emergency management of internal diseases / Edited by O.Babak and O.Bilovol. – Kyiv: AUS Medicine Publishing, 2010. – 448 p.
- Multimedia presentations
- Situational clinical-pharmacological and pharmacotherapeutic tasks
- Methodical manual of practical classes

- Electronic bank of test tasks by subdivisions of the discipline.

12. Recommended literature:

Basic:

1. Betram G Katzung Basic and Clinical Pharmacology, 14th Edition. - McGraw-Hill Medical, 2018.- 1235 p.
2. Pharmacology in rehabilitation. – 4-th edition / Charles D. Ciccone, PT. – USA, 2007. – 653 p.
3. Clinical pharmacology: Manual for practical classes. – 2-nd edition / Edited by O.V.Kraydashenko. – Vinnytsya: Nova Khyna Publishers, 2010. – 192 p.
4. T.R.Harrison and others Harrison’s principles of internal medicine,19 th edition (Vols 1&2). – McGraw Hill education, 2015. – 3983 p.
5. 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) Godovan V.V. Pharmacology in pictures and schemes. – Nova Knyha, 2021. - 464 p.
- 3) EDUCATIONAL AND METHODOICAL MANUAL to practical training in clinical pharmacology for the students of stomatological faculty / Strechen S.B., Tregub T.V., Bazalieieva I.V., Poludenko A.A. – Odessa, 2016.– 110 p.
- 4) Клініко-фармакологічний глосарій: навч. посібник / В.Й.Кресюн, В.В.Годован, С.Б.Стречень. – Одеса: ОНМедУ, 2015. – 328 с.

13. Electronic information resources:

1. State Expert Center of Ministry of Health of Ukraine <http://www.dec.gov.ua/index.php/ua/>
2. Ukrainian Scientific Pharmacopoeial Drug Quality Center <http://sphu.org/>
3. National Scientific Medical Library of Ukraine <http://library.gov.ua/>
4. National Library of Ukraine named after V.I. Vernadsky <http://www.nbuv.gov.ua/>
5. Resources for predicting inter-drug interactions (based on FDA instructions, in English) URL: <http://www.drugs.com>
6. Resource-Directory of Medicines and Forecasting of Intercurricular Interactions (in English). URL: <http://www.medscape.org>
9. Interregional Society of Evidence-Based Medicine: <http://www.osdm.org/index.php>

10. Bulletin of Evidence-Based Medicine: <http://www.evidence-update.ru>
11. European Society of Clinical Pharmacologists and Pharmacists:
<http://www.eacpt.org>
12. Resources for drug interactions: <http://medicine.iupui.edu/flockart/>

Study protocol for the efficacy and safety of drug use (according to the supervision of patients)

Educational research work

Student _____
 (Name, course, group, faculty)

Head _____

PROTOCOL

studies of the pharmacodynamics of the drug _____

Patient (name, age, body weight) _____

Clinical diagnosis: underlying disease _____

Complications of the underlying disease _____

Concomitant diseases _____

Study date: from _____ to _____

1. Treatment of the patient (provide in the form of prescriptions the 5 most significant drugs, including those selected for careful analysis)

2. The rationale for the appointment of drugs (international, commercial names, chemical structure, features of the introduction, pharmacokinetics, pharmacodynamics of drugs)

3. Expected therapeutic effect _____

4. Possible side effects _____

5. List the signs by which the therapeutic effectiveness of the drug will be monitored

Before treatment		After treatment
	Subjective	
A) _____		_____
B) _____		_____
C) _____		_____
D) _____		_____
E) _____		_____
	Objective	
A) _____		_____
B) _____		_____
C) _____		_____
D) _____		_____
	Laboratory-instrumental	
A) _____		_____
B) _____		_____

C) _____
D) _____

6. List the symptoms by which side effects of the drug will be controlled.

Side effects
no) _____

The presence of a reaction in the patient (yes, no) _____

Subjective

A) _____
B) _____
C) _____
D) _____
E) _____

Objective

A) _____
B) _____
C) _____
D) _____

Laboratory-instrumental

A) _____
B) _____
C) _____
D) _____

7. Evaluation of combination therapy (consider the possibility of co-administration of the studied drug with other drugs from section No. 1: pharmacokinetic, pharmacodynamic, pharmaceutical compatibility) _____

8. Conclusions and recommendations (effectiveness of treatment, prognosis of further use, the possibility of replacing other drugs) _____

The study conducted _____

Protocol checked _____

List of references literature