STATE UNIVERSITY
"UZHHOROD NATIONAL UNIVERSITY"
MEDICAL FACULTY 2
Department of Internal Medicine

"APPROVED"
Dean of the Medical Faculty 2
_____ Vasyl KALIY
"_28_" ____05____ 2025

SYLLABUS OF THE EDUCATIONAL DISCIPLINE

CC 43. Internal medicine II, including clinical pharmacology, clinical immunology and allergology, occupational diseases

Educational level	**Second (Master)**
Subject area	**22 "Health"/ I "Health and Social Welfare"**
Specialty	**222 "Medicine" / I2 "Medicine"**
Educational program	**"General Medicine"**
Discipline status	**Compulsory**
The language of instruction	**English**

Uzhhorod - 2025

"Internal medicine II, including clinical pharmacology, clinical immunology and allergology, occupational diseases" syllabus for higher education seekers of the subject area 22 "Health" / I "Health and Social Welfare", specialty 222 "Medicine"/ I2 "Medicine", educational program "General medicine".

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The syllabus was discussed and approved at the meeting of the Department
of Internal Medicine
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Minutes № _11_ of "_28_" __May_ 2025

Head of the Department _____ /Marianna TOVT-KORSHYNSKA/

Approved by the Scientific-Methodical Commission of the Medical Faculty 2

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Head of the Scientific-Methodical Commission _____ /Nataliia MALETS/

1 **1. DESCRIPTION OF THE COURSE**

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Name of indicators	**Distribution of academic hours according to the curriculum**	
	Full-time study	Extramural form of study
ECTS credits – 10	Year of training:	
Total number of hours – 300	5	-
Number of modules – 6	Semester:	
Weekly academic hours for full-time study: class-room academic hours – 5 student's self-study hours - 2,5	9-10 th	-
	Lectures:	
	30 hours	-
	Practical classes (seminars):	
	-	-
Type of final control: exam	Laboratory classes:	
	170 hours	-
Form of final control: oral	Self-study:	
	100 hours	-

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2. PURPOSE OF THE EDUCATIONAL SUBJECT

The purpose of studying the discipline "Internal medicine II, including clinical pharmacology, clinical immunology and allergology, occupational diseases" is to gain the knowledge, improve the abilities, skills and others competences in the field of internal medicine, occupational diseases, clinical immunology and allergology, clinical pharmacology, which are necessary in daily professional activity and apply it in the solving typical clinical cases, the scope of which is provided by defined lists of syndromes and symptoms, emergency conditions and diseases that require special patient management tactics; laboratory and instrumental investigations, medical manipulations.

According to the educational program, the study of the discipline contributes to the formation of the following competencies in higher education seekers:

General competences (GC):

GC 1. The ability to think abstractly, analyze and synthesize.
GC 2. The ability to learn and master modern knowledge.
GC 3. The ability to apply knowledge in practical situations.
GC 4. Knowledge and understanding of the subject area, and understanding of professional activity.
GC 5. The ability to adapt to and act in a new situation.
GC 6. The ability to make reasoned decisions.
GC 7. The ability to work in a team.
GC 8. Interpersonal skills.
GC 11.The ability to search, process and analyze information from various sources.

Professional competencies of the specialty (PC):

PC 1. The ability to collect medical information about the patient and analyze clinical data.
PC 2. The ability to determine the necessary panel of laboratory and instrumental research and to evaluate their results.
PC 3. The ability to establish a preliminary and a clinical diagnosis of the disease.
PC 4. The ability to determine the required mode of work and rest in the treatment of diseases.
PC 5. The ability to determine therapeutic nutrition in the treatment of diseases.
PC 6. The ability to determine the principles and nature of disease treatment and prevention.
PC 7. The ability to diagnose emergencies.
PC 8. The ability to determine the tactics of providing emergency care.
PC 10.The ability to perform medical manipulations.
PC 11.The ability to solve medical problems in new or unfamiliar environments having incomplete or limited information, taking into account aspects of social and ethical responsibility.
PC 15.The ability to conduct a functional capacity evaluation.
PC 16.The ability to maintain medical records, including those in electronic format.
PC 21.The ability to clearly and unambiguously convey one's own knowledge, conclusions and arguments on health care issues as well as related issues to specialists and non-specialists, in particular to people who are studying.
PC 22.The ability to manage healthcare workflows that are complex, unpredictable and require new strategic approaches.
PC 23.The ability to develop and implement scientific and applied projects in the healthcare field.
PC 24.To comply with ethical principles when working with patients and laboratory animals.
PC 25.To observe professional and academic integrity, bear responsibility for the reliability of the obtained scientific results.

3. PREREQUISITES FOR STUDYING THE EDUCATIONAL SUBJECT

The prerequisites for studying the educational subject “Internal medicine II, including clinical pharmacology, clinical immunology and allergology, occupational diseases” are mastering the following educational subjects (ES) of the educational program (EP):

ES 6 Medical biology,
ES 7 Medical and biological physics,
ES 8 Medicinal chemistry,
ES 9 Bioorganic chemistry,
ES 12 Physiology,
ES 14 Biochemistry,

ES 20 Pathomorphology,
ES 21 Pathophysiology,
ES 22 Pharmacology,
ES 23 Propaedeutics within medicine,
ES 26 Medical psychology,
ES 28 Radiology,
ES 29 Internal medicine, including endocrinology, medical genetics
ES 36 Neurology,
ES 37 Psychiatry, narcology.

4. EXPECTED LEARNING OUTCOMES

According to the educational program "Internal medicine II, including clinical pharmacology, clinical immunology and allergology, occupational diseases", the study of the educational subjects should ensure the achievement of the following program learning outcomes (PLO) by higher education seekers**:**

Program Learning Outcomes	**Code PLO**
To have thorough knowledge of the structure of professional activity. To be able to carry out professional activities that require knowledge updating and integration. To be responsible for professional development as well as to be able to carry out further professional training with a high level of autonomy.	PLO 1
To understand and possess a decent knowledge of fundamental and clinical biomedical sciences, at a level sufficient for solving professional tasks in the field of health care.	PLO 2
To have specialized conceptual knowledge, which includes scientific achievements in the field of health care and is the basis for conducting research, critical understanding of problems in the field of medicine as well as related interdisciplinary problems.	PLO 3
To distinguish and identify leading clinical symptoms and syndromes (according to the list 1); according to standard methods, using preliminary data of the patient's history, data of the patient's examination, knowledge about the human, human's organs and systems, establish a preliminary clinical diagnosis of the disease (according to the list 2)	PLO 4
To 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 the list 4), taking into account the age of the patient.	PLO 5
To establish a final clinical diagnosis by making a reasoned decision and analyzing the received subjective and objective data of a clinical and follow-up examination, to carry out differential diagnosis, upholding relevant ethical and legal standards, under the control of the managing physician within the health care facility (according to the list 2).	PLO 6
To assign and analyze additional (mandatory and optional) examination methods (laboratory, functional and/or instrumental) (according to the list 4) of patients with diseases of organs and body systems for carrying out differential diagnosis of diseases (according to the list 2).	PLO 7
To determine the main clinical syndrome or preconditions for the severity of the condition of the victim/the injured (according to the list 3) by making a reasoned decision and assessing the person's condition under any circumstances (within or outside a healthcare facility), both in conditions of emergency and hostilities as well as in field conditions, in conditions of lack of information and limited time.	PLO 8
To determine the nature and principles of treatment (conservative, operative) of patients with diseases (according to the list 2), taking into account the patient's age, within or outside a healthcare facility and at the stages of medical evacuation, including in field conditions, on the basis of a preliminary clinical diagnosis, upholding relevant	PLO 9

ethical and legal standards, 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 justify personalized recommendations under the control of the managing physician within a medical facility.	
To determine the necessary mode of work, rest and nutrition on the basis of the final clinical diagnosis, upholding relevant ethical and legal standards by making a reasoned decision according to existing algorithms and standard schemes.	PLO 10
To determine tactics and provide emergency medical care in emergency situations (according to the list 3) in limited time conditions according to existing clinical protocols and standards of treatment.	PLO 14
To perform medical manipulations (according to the list 5) within a medical facility, at home or at work based on a previous clinical diagnosis and/or indicators of the patient's condition by making a reasoned decision, upholding relevant ethical and legal standards.	PLO 17
To determine the state of functioning and limitations of a person's vital activities and the duration of work incapacity with the preparation of relevant documents, within a healthcare facility, based on data about the disease and its history, peculiarities of the person's professional activity, etc. To maintain medical documentation regarding the patient and the contingent of the population on the basis of the regulatory documents.	PLO 18

List 1 (syndromes and symptoms)

4. anuria and oliguria
5. arterial hypertension
6. arterial hypotension
7. chest pain
9. back pain and limb pain
12. vomiting
15. pleural effusion
18. hemorrhagic syndrome
23. headache
24. dysuria
30. shortness of breath
33. dizziness
35. cardiomegaly
46. edematous syndrome
47. obesity (+ body weight)
54. polyuria
57. heart rhythm and conduction disturbances
58. sudden cardiac arrest
59. disorders of consciousness
61. urinary syndrome
67. joint syndrome
69. weight loss
70. cyanosis

List 2 (diseases)

IV) Diseases of the cardiovascular system:
40. aortic aneurysms
41. atherosclerosis
42. varicose veins of the lower extremities
43. congenital heart defects
44. secondary arterial hypertension
45. acute occlusion of main and peripheral arteries;
46. endocarditis
47. essential and secondary arterial hypertension
48. ischemic heart disease
49. Cardites
50. cardiomyopathy
51. pulmonary heart
52. acquired heart defects
53. obliterating endarteritis
54. pericarditis
55. heart rhythm and conduction disturbances
56. heart failure
57. injuries of the heart and blood vessels
58. pulmonary embolism
59. phlebitis, thrombophlebitis

VII) Diseases of the genitourinary system:
107. amyloidosis of the kidneys
110. glomerulonephritis
111. dysmetabolic nephropathies
112. nephrotic syndrome
114. pyelonephritis
117. tubulointerstitial nephritis
119. chronic kidney disease

VIII) Diseases of the skin and subcutaneous tissue:
121. allergic dermatoses (dermatitis, toxidermia, eczema)

IX) Diseases of the musculoskeletal system and connective tissue:
131. ankylosing spondyloarthritis
132. congenital and acquired malformations of

the
musculoskeletal system
133. acute rheumatic fever
134. dermatomyositis and polymyositis
136. osteoarthritis
138. gout
140. reactive arthritis
141. rheumatoid arthritis
142. systemic scleroderma
143. systemic lupus erythematosus
144. systemic vasculitis (polyarteritis nodosa, hemorrhagic vasculitis, hypersensitivity vasculitis)
149. chronic rheumatic disease
150. juvenile rheumatoid arthritis

List 3 (emergency conditions)

2. hypertensive crisis
5. acute urinary retention
9. acute heart failure
10. acute poisoning, including combat poisonous substances
12. acute coronary syndrome
13. acute radiation and chemical damage, including in field conditions and emergency situations
20. sudden cardiac arrest
21. collapse
22. impaired consciousness and comatose states
25. acute anaphylactic reactions
26. acute heart rhythm disturbances,
29. venous and arterial thromboembolism
35. bites of snakes, insects, animals

List 4 (laboratory and instrumental studies)

1. pleural fluid analysis
2. analysis of ascitic fluid
3. analysis of synovial fluid
4. Zimnitsky test - urine analysis
5. Nechiporenko test - urine analysis
7. blood proteins and their fractions, C-reactive protein
10. blood lipids and lipoproteins and their fractions
11. blood hormones
13. creatinine, urea in blood and urine, glomerular
filtration rate
14. blood electrolytes
17. coagulogram
18. blood uric acid
19. blood alkaline phosphatase
23. histomorphological study of muscle and skin biopsy
27. standard 12-lead ECG (in 12 leads)
30. echocardiography and dopplerography
32. full blood count
33. urinalysis
35. general analysis of cerebrospinal fluid
38. general immunological blood profile
42. serological reactions in autoimmune diseases
44. microbiological research of biological fluids and
secretions
45. measurement of radiation (sound, vibration, ionizing), individual radiometry.
46. methods of instrumental visualization of the thyroid gland
47. X-ray contrast angiography
49. methods of instrumental visualization of chest
cavity organs
50. methods of instrumental visualization of the genitourinary system
52. methods of instrumental visualization of the skull, spine, spinal cord, bones and joints
58. measurement of ergonomic indicators of difficulty and intensity of work.

List 5 (medical manipulations)

1. perform indirect heart massage
2. perform artificial respiration
3. perform defibrillation using a manual automatic cardioverter defibrillator
4. register a standard 12-lead ECG
10. administer drugs (intravenous jet and drip, intraosseous), incl. in field conditions

11. provide peripheral venous access
12. measure blood pressure
13. to restore the patency of the respiratory tract
22. determine blood groups, Rhesus affiliation
23. transfuse blood components and blood substitutes
29. palpate the thyroid gland

Expected learning outcomes (ELO) that should be achieved by students after mastering the discipline "Internal medicine II, occupational diseases, clinical immunology and allergology, clinical pharmacology":

ELO code	Expected learning outcomes of the discipline	PLO code
ELO 1	The ability to carry out professional activities based on updating and integrating knowledge. The ability to be responsible for professional development, as well as to carry out further professional training with a high level of autonomy.	PLO 1
ELO 2	The ability to possess a decent knowledge of basic and clinical biomedical sciences at a level sufficient to solve professional tasks in the field of health care.	PLO 2
ELO 3	Possession of specialized conceptual knowledge, which includes scientific achievements in the field of health care and is the basis for conducting research, critical understanding of problems in the field of medicine as well as related interdisciplinary problems.	PLO 3
ELO 4	Ability to distinguish and identify leading clinical symptoms and syndromes (according to list 1); according to generally accepted methods, using preliminary medical history data, patient examination data, knowledge about a person, human organs and systems, establish a preliminary clinical diagnosis of the disease (according to list 2)	PLO 4
ELO 5	The ability to 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 the list 4), taking into account the age of the patient.	PLO 5
ELO 6	The ability to establish a final clinical diagnosis by making a reasoned decision and analyzing the received subjective and objective data of a clinical and follow-up examination, to carry out differential diagnosis, upholding relevant ethical and legal standards, under the control of the managing physician within the health care facility (according to the list 2).	PLO 6
ELO 7	Ability to assign and analyze additional (mandatory and optional) examination methods (laboratory, functional and/or instrumental) (according to the list 4) of patients with diseases of organs and body systems for carrying out differential diagnosis of diseases (according to the list 2).	PLO 7
ELO 8	Ability to determine the main clinical syndrome or preconditions for the severity of the condition of the victim/the injured (according to the list 3) by making a reasoned decision and assessing the person's condition under any circumstances (within or outside a healthcare facility), both in conditions of emergency and hostilities as well as in field conditions, in conditions of lack of information and limited time.	PLO 8
ELO 9	Ability to determine the nature and principles of treatment (conservative, operative) of patients with diseases (according to the list 2), taking into account the patient's age, within or outside a healthcare facility and at the stages of medical evacuation, including in field conditions, on the basis of a preliminary	PLO 9

	clinical diagnosis, upholding relevant ethical and legal standards, by making a reasoned decision according to existing algorithms and standard schemes;	
ELO 10	Ability to determine the necessary mode of work, rest and nutrition on the basis of the final clinical diagnosis, upholding relevant ethical and legal standards by making a reasoned decision according to existing algorithms and standard schemes.	PLO 10
ELO 11	Ability to determine tactics and provide emergency medical care in emergency situations (according to the list 3) in limited time conditions according to existing clinical protocols and standards of treatment.	PLO 14
ELO 12	Ability to perform medical manipulations (according to the list 5) within a medical facility, at home or at work based on a previous clinical diagnosis and/or indicators of the patient's condition by making a reasoned decision, upholding relevant ethical and legal standards.	PLO 17
ELO 13	Ability to determine the state of functioning and limitations of a person's vital activities and the duration of work incapacity with the preparation of relevant documents, within a healthcare facility, based on data about the disease and its history, peculiarities of the person's professional activity, etc. To maintain medical documentation regarding the patient and the contingent of the population on the basis of the regulatory documents.	PLO 18
ELO 14	The ability to follow the norms of professional communication interaction with colleagues, management, work effectively in the team; analyze information obtained as a result of scientific research	PLO 1,2

5. DIAGNOSTIC TOOLS AND EVALUATION CRITERIA OF LEARNING OUTCOMES

Means of assessment and methods of demonstrating learning outcomes

Means of assessment and methods of demonstrating learning outcomes in the discipline are:

ELO 1. – oral answer, solving clinical problems, clinical examination of the patient, working with cases histories

ELO 2. – evaluation of the results of laboratory and instrumental studies, electrocardiogram, solving test tasks (oral, computer), oral answer

ELO 3. – clinical analysis of the patient/solving clinical problems

ELO 4. – analysis of international guidelines by modeling various clinical situations

ELO 5, 6. – clinical analysis of the patient, analysis of international guidelines by modeling various clinical situations, work in small groups, mutual evaluation of students, analysis of letters prescriptions and their correction

ELO 7. – solving test tasks, working with mannequins

ELO 8. – analysis of algorithms for performing medical manipulations, their demonstration on dummies in the simulation center, training videos

ELO 9, 10. – oral answer, solving test tasks

ELO 11. – analysis of scales, algorithms, modeling of clinical situations, training on using Internet resources to determine the degree of risk, progression diseases or a certain parameter, the interpretation of examination results and their clinical significance

ELO 12. – oral answer, solving test tasks

ELO 13. – clinical examination of the patient (solving clinical problems), solving test tasks (oral, written), oral interview

ELO 14. – "icebreaker", feedback, work in small groups

Forms of control and criteria for learning outcomes evaluation

Forms of current control: clinical examination of the patient (solving clinical cases), test tasks, evaluation of laboratory test results, analysis and evaluation of instrumental test results, demonstration of medical manipulation on a dummy, oral answer.
Form of module control: computer testing, written control work.
Form of semester control: final control (combined).
Form of final academic performance assessment: after the completion of each of the modules 1-6, a final modular control is conducted, and after the end of the academic year, an exam is held.

Components of total final score for the discipline"Internal medicine II, including clinical pharmacology, clinical immunology and allergology, occupational diseases"

Module	**Number of hours**	**Percentage (%) from Total planned hours**	**Maximum score for the Module**
Cardiology	55	32	65
Rheumatology	40	25	50
Nephrology	15	8	15
Occupational diseases	14	8	16
Clinical immunology and allergology	26	15	30
Clinical pharmacology	20	12	24
Total for 6 Modules	170	100	200

Scheme of accrual and distribution of points received by students

Final grade for the discipline (FG) = OG1 + OG2-3 + OG4 + OG5 + OG6, where OGx is the overall grade for each of the modules, the calculation of OG for each of the modules is discussed below.

4Distribution of points received by higher education seekers

5(Module 1 - Cardiology)

Current assessment and self-study (130)																Sum
T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	Current testing	Simulation training	200
10	10	10	10	10	10	10	10	10	10	10	5	5	10	10 test blocks of 5 points each = 50	20	

* T1, T2 ... - topics

The assessment for Module 1 should be converted into the overall grade for the discipline using the formula: OG1 = OM1 * 65/200, where OG1 is the overall assessment for Module 1, which will be used in the calculation of the overall assessment for the discipline, OM1 is the total assessment for Module 1 received in a 200-point system, and 65 is the maximum score for OG1.

6Distribution of points received by higher education seekers

7(Modules 2-3 - Rheumatology, Nephrology)

Current assessment and self-study (130)															Sum
T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	Current testing	Simulation training	200
10	10	10	10	10	10	10	10	10	10	10	10	10	10 test blocks of 5 points each = 50	20	

* T1, T2 ... - topics

The assessment for Modules 2-3 should be converted into an overall grade for the discipline using the formula: OG2-3 = OM2-3 * 65/200, where OG2-3 is the overall score for Modules 2 and 3, which will be used in the calculation of the overall score for the discipline, OM2-3 is the total score for Modules 2 and 3 obtained in a 200-point system, 65 is the maximum score OG2-3.

8Distribution of points received by higher education seekers
9(Modules 4 - Occupational diseases)

Current assessment and self-study (60)									Sum
T1	T2	T3	T4	T5	T6	T7	Current testing	Simulation training	200
0	10	10	10	10	10	10	6 test blocks of 10 points each = 60	20	

* T1, T2 ... - topics

The assessment for Module № 4 should be converted into the overall grade for the discipline using the formula: OG4 = OM4 * 16/200, where OG4 is the overall assessment for Module №4, which will be used in the calculation of the overall assessment for the discipline, OM4 is the total assessment for Module №4 received in a 200-point system, and 16 is the maximum score for OG4.

10 Distribution of points received by higher education seekers
11 (Module №5 – Clinical immunology and allergology)

Current assessment and self-study (130)														Sum
T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	Current testing	Simulation training	200
10	10	10	10	10	10	10	10	10	10	10	10	10	10 test blocks of 5 points each = 50	20	

* T1, T2 ... - topics

The assessment for Module №5 should be converted into the overall grade for the discipline using the formula: OG5 = OM5 * 30/200, where OG5 is the overall assessment for Module №5, which will be used in the calculation of the overall assessment for the discipline, OM5 is the total assessment for Module №5 received in a 200-point system, and 30 is the maximum score for OG5.

12 Distribution of points received by higher education seekers
13 (Module 6 – Clinical pharmacology)

Current assessment and self-study (100)										Sum
T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	Current testing	200
10	10	10	10	10	10	10	10	10	10	10 test blocks of 10 points each = 100	

* T1, T2 ... - topics

* T11, T12 - for self-study

The assessment for Module 6 should be converted into the overall grade for the discipline using the formula: OG6 = OM6 * 24/200, where OG6 is the overall assessment for Module 6, which will be used in the calculation of the overall assessment for the discipline, OM6 is the total assessment for Module 6 received in a 200-point system, and 24 is the maximum score for OG6.

Evaluation of certain types of educational work in the discipline

Type of activity of the higher education seeker	**Module 1**		**Module 2-3**		**Module 4**		**Module 5**		**Module 6**	
	Number	Maximum number of points (total)	Number	Maximum number of points (total)	Number	Maximum number of points (total)	Number	Maximum number of points (total)	Number	Maximum number of points (total)
Laboratory classes (admission, completion and defense)	14	130	13	130	7	60	13	130	10	100
Computer testing in thematic assessment	10	50	10	50	6	60	10	50	10	100
Module test	-	-	1	10	1	60	-	-	-	-
Simulation training		20		20	4	20	7	20		
Total		**200**		**200**		**200**		**200**		**200**

Criteria of current educational activity evaluation

The grade "*excellent*" (180-200 points) is awarded to students who actively participated in the discussion of the most complicated issues on the studied topic, gave at least 90% correct answers to standardized test tasks, completed written tasks without errors, completed practical tasks and properly presented their results.

The grade *"good"* (148-179 points) is awarded to students who participated in the discussion of the most complicated issues on the studied topic, gave at least 74% correct answers to standardized test tasks, made some minor mistakes in answers to written tasks, completed practical tasks and properly presented their results.

The grade "*satisfactory*" (120-147 points) is awarded to students who participated in the discussion of the most complicated issues on the studied topic, gave at least 60% correct answers to standardized test tasks, made significant mistakes in answers to written tasks, completed practical tasks and properly presented their results.

The grade *"unsatisfactory"* (0-119 points) is awarded to students who did not participate in the discussion of the most complicated issues on the studied topic, gave less than 60% correct answers to standardized test tasks, made gross mistakes in answers to written tasks or did not answer them at all, did not complete practical tasks and did not properly present their results.

Criteria for module test evaluation

A module test is done by completing prepared tasks (test cards) with different cards having the same difficulty level. All students are allowed to complete the module test, regardless of the current assessment's results and the presence of unfulfilled missed practical classes. The period of 1.5 hours is given to complete the entire module test. It is forbidden to use any information sources while completing the module test.

The grade "*excellent"* (180-200 points) is awarded to students who gave at least 90% correct answers to standardized test tasks and completed written tasks without errors.

The grade "*good*" (148-179 points) is awarded to students who gave at least 74% of the correct answers to standardized test tasks and made some minor mistakes in the answers to written tasks.

A student who gave at least 60% of the correct answers to standardized test tasks and made significant mistakes in the answers to written tasks receives the grade "satisfactory" (*120-147* points).

The grade "*unsatisfactory*" (0-119 points) is awarded to students who gave less than 60% correct answers to standardized test tasks, made gross errors in answers to written tasks, or did not provide answers to the designed written tasks.

Criteria for the final semester control evaluation

An exam is a form of final assessment of a student's theoretical knowledge and practical skills in a specific subject over the semester, conducted as a control measure. A student is considered eligible to take the semester exam if he attended all the classes, required by the curriculum for the discipline, completed all types of work specified in the course syllabus of this educational discipline, and the study scored during the semester is no less than the minimum number of points (70 points).

Students who are unsatisfied with the final positive grade based on the results of modular assessments, as well as those who received a grade of "unsatisfactory" and do not have any unfulfilled laboratory classes, have the right to take the exam in the subject. Full-time students are admitted to the final (semester) control of a specific discipline in the form of a credit or exam if, based on the results of the module tests, they scored at least 35 per cent of the possible points. Based on the results of the answers given during the exam/credit, a grade is awarded according to a 200-point scale. Regardless of whether the student takes the exam (credit) because their final module grade is unsatisfactory (70-119 points) or to increase the positive grade, the teacher gives the student a grade based solely on the level of their knowledge, demonstrated during the exam (credit), that is, based on 200 points, but the final (semester) grade cannot be lower than the final module grade.

Criteria for the final exam

The grade "*excellent*" (180-200 points, A) is awarded to students who: have comprehensive, systematic, and deep knowledge of educational and syllabus material; are able to independently perform the tasks prescribed by the syllabus, apply the acquired knowledge and skills in non-standard situations; learned the basic and familiarize themselves with the additional literature recommended by the program; mastered the interrelationship of the main concepts of the discipline and are aware of their importance for the profession they acquire; freely express their own opinions, independently evaluate various life phenomena and facts, revealing their personal position; independently determine the individual goals of their own educational activity, revealed creative abilities and used them when studying the syllabus material, as well as demonstrated interest to scientific work.

The grade "*good*" (164-179 points, B) is awarded to students who: have comprehensive, systematic, and deep knowledge of educational and syllabus material, including applying it in practice, have sufficient systematic knowledge in accordance with the syllabus material, apply it reasonably in different situations; have the ability to independently search for information, as well as to analyze, set and solve professionally oriented problems; while answering the exam/credit questions they might have some inaccuracies, with correcting those themselves. The student should also be able to choose convincing arguments to confirm the studied material;

The grade "*good*" (148-163 points, C) is awarded to students who: completed the work in general, but during the final control make a certain number of mistakes; are able to compare, generalize, systematize information under the guidance of a teacher, in general independently apply it in practice, control their own activities; learned the curriculum material, successfully completed the tasks prescribed by the program, familiarized themselves with the basic literature recommended by the program;

The grade "*satisfactory*" (128-147 points, D) is awarded to students who: know the basic syllabus material to the extent necessary for further study and its use in the future profession; perform tasks well, but with a significant number of errors; familiarized themselves with the basic literature recommended by the syllabus; make mistakes when completing tasks during classes or exams but find ways to correct them under the guidance of the teacher.

The grade "*satisfactory*" (120-127 points, E) to students who: have basic knowledge of educational and syllabus material in the amount necessary for further study and its application in the future profession, and the performance of tasks meets the minimal criteria. Knowledge is reproductive in nature.

The grade "*unsatisfactory*" (70-119 points, FX) is awarded to students who: revealed significant gaps in the knowledge of the main syllabus material and made fundamental mistakes during the completion of tasks provided by the syllabus.

The grade "*unsatisfactory*" (0-69 points, F) is awarded to students who learned the educational material only at the level of elementary recognition and reproduction of individual facts or did not learn it at all; made gross errors when completing the tasks provided by the syllabus; cannot continue their studies and are not ready for professional activity after graduating from the university without re-studying this discipline.

The exam is conducted in an oral form, according to the schedule. The format of the exam is standardized and includes the assessment of theoretical and practical preparation. During the exam for the discipline "Internal medicine II, including clinical pharmacology, clinical immunology and allergology, occupational diseases" a student has the opportunity to improve the grade in any of the 6 modules that make up the final grade. The theoretical questions for the exam are distributed into several modules. By drawing an exam ticket, the student answers only the questions related to the selected module.

6. SYLLABUS

Module 1: PRINCIPLES OF DIAGNOSIS, TREATMENT AND PREVENTION OF MAJOR CARDIOVASCULAR DISEASES

(95 hours, 3,17 credits)

Topic 1. Essential hypertension (Hypertensive disease).

Definition. The role of disorders of the central and renal mechanisms regulating pressure, endothelial function and other factors. Classification. Clinical manifestations and work-up. The target organ damage. The differential diagnosis. Risk stratification. Complications. Isolated systolic hypertension. Hypertensive crises: complicated and uncomplicated hypertensive crises, features clinical course and treatment tactics.

Topic 2. Essential hypertension (hypertensive disease).

Treatment: principles of non-drug and drug treatment arterial hypertension. Drugs of the first and second line of treatment. Modern recommendations for choosing antihypertensive drugs. Current standards of treatment. Monotherapy and combined therapy. Side effects of hypotensive agents.

Topic 3. Secondary (symptomatic) arterial hypertension.

Definition. The main causes. Clinical features and diagnosis of renal (renovascular, renal parenchymal), endocrine (Cushing's syndrome, pheochromocytoma, Conn's syndrome, toxic goiter) and hemodynamic arterial hypertension. Hypertension in pregnancy, metabolic disorders (metabolic syndrome). The significance of laboratory and instrumental methods for differential diagnosis and diagnosis verification. Therapeutic and surgical treatment. Primary and secondary prevention. Prognosis and occupational capability.

Topic 4. Atherosclerosis.

Definition. Role of hyperlipidemias, general and local inflammation, damage of the vascular wall and platelets in atherosclerosis. Risk factors. Clinical features depending on the predominant localization (aorta, coronary, mesenteric and renal arteries, the arteries of the lower extremities). Role of laboratory, radiography and other instrumental methods. The differential diagnosis. Complications. General principles of treatment. Therapeutic tactics in different clinical scenarios. Primary and secondary prevention. Prognosis and occupational capability.

Topic 5. Coronary heart disease (CHD), acute myocardial infarction.

Definition. The role of atherosclerosis, atherosclerotic plaque destabilization and functional factors in the pathogenesis of various forms of CHD. Classification. Features of clinical course and diagnosis of acute myocardial infarction. The term "acute coronary syndrome". Various forms of CHD. Criteria for diagnosis. The differential diagnosis of various forms of CHD. Complications of acute myocardial infarction (acute left ventricular failure, cardiac arrhythmias and conduction abnormalities, myocardial rupture, acute cardiac aneurysm, post-MI Dressler’s syndrome, etc.). Therapeutic tactics in different periods of acute myocardial infarction. Indications for surgical treatment. Rehabilitation. Primary and secondary prevention.

Topic 6. Chronic forms of coronary artery disease.

Features of clinical course and diagnosis of different variants of stable angina. Painless forms of coronary artery disease (silent myocardial ischemia, post-infarction and diffuse cardiosclerosis). Peculiarities of clinical manifestations, diagnostic criteria. Differentiated treatment of various forms of CHD. Treatment of angina, acute left ventricular failure. Prognosis and occupational capability in different forms of CHD.

Topic 7. Pulmonary embolism and cor pulmonale.

Definition and diagnosis of pulmonary embolism. Risk factors. The pathogenesis of hemodynamic disorders. The clinical course of different forms. Criteria for the diagnosis, differential diagnosis. Diagnostic value of instrumental data. Therapeutic tactics. Indications for surgical treatment. Primary and secondary prevention. Prognosis and occupational capability.

Definition of pulmonary heart. Etiology and pathogenesis. Classification. Clinical manifestations, instrumental data depending on the etiological factor and phase (compensation or decompensation). The differential diagnosis. The principles of differential treatment. Primary and secondary prevention. Prognosis and occupational capability.

Topic 8. Infective endocarditis.

Definition. Etiology and pathogenesis. Features of course depending on the pathogen. Diagnostic criteria. The value of laboratory methods and echocardiographic examination in the diagnosis. The differential diagnosis. Complications (cardiac failure, embolism, abscesses). Treatment. Profiles of antibiotic therapy. Indications for surgical treatment. Primary and secondary prevention. Prognosis and occupational capability.Congenital heart disease in adults.

Topic 9. Myocarditis.

Definition. Classification. Clinical characteristics. Diagnosis. The differential diagnosis. Treatment. Prognosis and occupational capability.

Topic 10. Cardiomyopathies.

Definition. Classification. The etiology and pathogenesis of the main types of cardiomyopathy (dilated, hypertrophic, restrictive, arrhythmogenic right ventricular, non-classified). Clinical signs, ECG changes, echocardiography and other radiography methods data depending on the etiology and clinical course. Criteria for the diagnosis and differential diagnosis. Complications. Features of management of various cardiomyopathies. Primary and secondary prevention. Prognosis and occupational capability.

Topic 11. Pericarditis.

Definition. Etiology and pathogenesis. Classification. Clinical course and diagnosis of various forms of pericarditis. Methods for the diagnosis verification. The differential diagnosis of myocardial injury. Cardiac tamponade. Indications for pericardial puncture and its diagnostic and therapeutic value.

Differentiated treatment of various forms of pericarditis. Primary and secondary prevention. Prognosis and occupational capability.

Topic 12. Congenital and acquired (valvular) heart disease in adults.

Definition. Interventricular septal defect and atrial septal defect, patent ductus arteriosus, coarctation of the aorta. Mechanisms of hemodynamical alterations, significance of pulmonary hypertension. The value of non-invasive and invasive methods for the diagnosis and differential diagnosis. Complications. Eisenmenger’s syndrome. Indications for surgical treatment. Prevention of complications. Prognosis and occupational capability.Definition. Anomalies of the mitral, aortic, tricuspid valves. The etiology, hemodynamic mechanisms. Classification. Combined mitral and aortic defects. Clinical manifestations. The value of non-invasive and invasive methods. The differential diagnosis. Complications. Indications for surgical treatment. Primary and secondary prevention. Prognosis and occupational capability.

Topic 13. Acute and chronic heart failure.

Definition. The main causes. The pathogenesis of disorders of the central and peripheral hemodynamics in various forms (left and right heart). The role of neurohumoral activation and cardiac remodeling. Classification. Clinical manifestations and their features depending on the variant (systolic and diastolic), stage and functional class. Diagnosis. The significance of echocardiography. Treatment. Primary and secondary prevention. Prognosis and occupational capability.

Topic 14. Heart rhythm disturbances.

Violation of heart rhythm. Definition. Etiology. Electrophysiological mechanisms of arrhythmias (extrasystole, atrial fibrillation and flutter, ventricular tachycardia and ventricular fibrillation). Clinic, ECG diagnosis and differential diagnosis of atrial and ventricular extrasystoles, atrial fibrillation and flutter, sick sinus syndromes and Wolf-Parkinson-White syndrome. Complication.

Patient examination plan, additional laboratory and instrumental examination methods (ECG, daily Holter monitoring, echocardiography, electrophysiological examination). Management tactics. The main classes of antiarrhythmic drugs, indications for their appointment, side effects.. Current standards of treatment. Electropulse therapy. Surgical methods treatment of arrhythmias. Primary and secondary prevention. Prognosis and occupational capability.

Topic 15. Conduction heart disturbances.

Definition. Etiology. Clinical signs and ECG diagnostics of various types and degrees of atrioventricular conduction disturbances. AV blocks (Mobitz 1, 2). Frederick's syndrome. ECG diagnosis of bundle branch block. Atrio-ventricular blockade and His bundle branch blockade. Tactics of managing patients with chronic and acute conduction disturbances, additional laboratory and instrumental research methods. Drug treatment and cardiac stimulation. Artificial rhythm drivers. Emergency care for Morganhi-Adams-Stokes syndrome. Indications and principles of electrical

stimulation (temporary, permanent). Primary and secondary prevention. Prognosis and occupational capability.

Module 2: PRINCIPLES OF DIAGNOSIS, TREATMENT AND PREVENTION OF MAJOR DISEASES OF BONES AND SYSTEMIC RHEUMATIC DISORDERS
(65 hours, 2,16 credits)

Student should be able to:

- conduct a survey and physical examination of patients with major cardiac diseases;
- justify the use of major invasive and non-invasive diagnostic methods used in rheumatology;
- determine the etiologic and pathogenetic factors of major diseases of the joints;
- identify typical clinical presentation of major rheumatic disorders;
- identify the different variants of major complications;
- make a plan of survey of patients with rheumatic diseases;
- conduct differential diagnosis, justify and formulate diagnosis of major diseases of the joints, connective tissue based on data analysis of laboratory and instrumental examination;
- appoint treatment, conduct primary and secondary prevention of major diseases of the joints, connective tissue;
- register and interpret MRI, X-ray of the spine and joints;
- interpret acute phase biochemical blood test, synovial tissue analysis.

Topic 1. Symptoms and syndromes of common rheumatic disorders

Chief complaints and symptoms (pain in muscles and joints, back pain, etc.). General and specific symptoms. Physical symptoms of rheumatic diseases. Methods of physical examination of patients with rheumatic diseases. Standard echocardiography, indications for, information and clinical evaluation. The standard echocardiography and Doppler. Radiographic methods of diagnosing diseases of the heart, joints and spine. Computer and MRI. Immunological and biochemical methods.

Topic 2. Acute Rheumatic Fever

Definition. The role of streptococcal infection and immunological reactivity of acute rheumatic fever. Classification. The clinical picture (carditis, polyarthritis, chorea, skin lesions). The value of laboratory and instrumental methods. Diagnostic criteria. Differential diagnosis. Complications. Treatment considering the degree of activity. Primary and secondary prevention. Prognosis and occupational capability.

Topic 3. Rheumatoid arthritis

Definition. Etiological factors and pathogenesis. The role of disorders of the immune status of the development of the disease. Classification and nomenclature. Clinical activity based on the pathological process, stage of disease, systemic manifestations. The value of laboratory and instrumental methods for the diagnosis of the disease, its stage and activity. Diagnostic criteria, meaning the study of synovial fluid. Differential diagnosis. Complications. Strategy treatment. Basic therapy. Treatment tactics and nonsteroidal anti-inflammatory drugs. Prevention. Prognosis and occupational capability.

Topic 4. Systemic lupus erythematosus

Definition. Etiological factors and pathogenesis. Classification. Clinical manifestations depending on the organ damage and systems of disease activity. Laboratory values, including immunological methods. Diagnostic criteria. Differential diagnosis. Complications. Treatment. Pulse therapy. Prevention. Prognosis and occupational capability.

Topic 5. Systemic sclerosis. Dermatopolymyositis

Definition. Etiological factors and pathogenesis. Classification. The clinical picture depending on the organ damage and systems. Diagnostic criteria. Differential diagnosis. Complications. Treatment. Prevention. Prognosis and occupational capability.

Topic 6. Systemic vasculitis

Definition. Etiology and pathogenesis. Clinical manifestations, diagnostic criteria. Differential diagnosis. Treatment. Prevention. Weather and efficiency.

Nodular polyarteritis. Definition. Etiology and pathogenesis. Clinical manifestations, diagnostic criteria. Differential diagnosis. Treatment. Prevention. Prognosis and occupational capability.

Topic 7. Osteoarthritis

Definition. Etiology and pathogenesis. Classification. The clinical picture depending on the predominant localization of lesions. Diagnosis. Differential diagnosis. Pharmacological and non-pharmacological treatment. Primary and secondary prevention. Prognosis and occupational capability.

Topic 8. Ankylosing Spondylitis

Definition. Etiological factors and pathogenesis. Classification. The clinical picture. The value of instrumental and laboratory methods. Diagnostic criteria. Differential diagnosis. Treatment. Prevention. Prognosis and occupational capability.

Topic 9. Reactive arthritis

Definition. Etiology and pathogenesis. Classification. Clinical manifestations of reactive arthritis of various etiologies. Reiter's syndrome, the value of laboratory and instrumental methods of diagnosis. Diagnostic criteria. Differential diagnosis. Treatment, the role of antibiotic therapy. Primary and secondary prevention. Prognosis and occupational capability.

Topic 10. Gout. Pseudogout

Definition. Etiology and pathogenesis. Classification. Features articular syndrome and destruction of internal organs. Criteria for diagnosis. Differential diagnosis. Complications. The principles of differential treatment. Prevention. Prognosis and occupational capability.

Module 3. PRINCIPLES OF DIAGNOSIS, TREATMENT AND PREVENTION OF MAJOR DISEASES OF THE GENITOURINARY SYSTEM (25 hours, 0,83 credit)

Student should be able to:

- conduct a survey and physical examination of patients with kidney diseases.
- justify the use of major invasive and non-invasive diagnostic methods used in nephrology,
- determine the indications and contraindications for their conduct, complications.
- determine the etiologic and pathogenetic factors of major diseases of the kidney.
- identify typical clinical presentations of major kidney diseases.
- make a plan of survey of patients with major kidney disease.s
- conduct differential diagnosis, justify and formulate diagnosis of major diseases of the kidney, based on data analysis of laboratory and instrumental examination.
- appoint treatment, conduct primary and secondary prevention of major diseases of the kidney.
- diagnose and assist in acute renal failure.
- register and interpret US of the kidneys, radiologic investigation.
- interpret kidney function test, urinalysis, estimate GFR.
- apply the moral and ethical principles of medical specialists and principles of professional subordination.

Topic 1. Glomerulonephritis. Renal amyloidosis

Definition. Etiology, the role of streptococcal infection and immunological disorders in disease development. The pathogenesis of major clinical syndromes. Classification. Clinical manifestations and diagnosis of specific forms. Differential diagnosis. Complications (eclampsia, acute renal failure and chronic renal et al.). Treatment based on morphological variants and clinical courses. Primary and secondary prevention. Weather and efficiency.

Definition, etiology, pathogenesis of amyloidosis. Classification. Clinical manifestations of renal amyloidosis. Diagnostic criteria. Differential diagnosis. Complications. Treatment. Primary and secondary prevention. Weather and efficiency.

Topic 2. Pyelonephritis. Tubulo-interstitial nephritis

Definition. The role of infection. Classification. Primary and secondary pyelonephritis. Clinic. Diagnosis. The differential diagnosis. Complications. Treatment. Primary and secondary prevention. Weather and efficiency.

Definition, etiology, pathogenesis tubulo-interstitial nephritis. Clinical manifestations. Criteria for the diagnosis and differential diagnosis. Complications. Treatment. First aid in acute renal failure. Primary and secondary prevention. Weather and efficiency.

Topic 3. Acute and chronic renal failure

Definition. Etiological factors. Pathogenesis of lesions and systems, their clinical manifestations. The term "chronic kidney disease". Classification. Clinical and laboratory parameters change depending

on the stage. Differential diagnosis. Complications. Treatment at different stages. Kidney replacement therapy: dialysis, kidney transplantation. Indications and contraindications for renal replacement therapy, complications. Primary and secondary prevention. Weather and efficiency.

Module 4. OCCUPATIONAL DISEASES (40 hours, 1,33 credits)

Student should know:

- the role and value of harmful occupational factors in the development of occupational diseases;
- the stages of the formation of occupational pathology as a clinical discipline for internal medicine and the contributions of individual scientists at each of its stages;
- pathogenetic mechanisms of occupational diseases;
- clinical symptoms, diagnostic methods of occupational diseases;
- diagnostic criteria for occupational diseases;
- principles of treatment, prevention, and rehabilitation of patients with occupational diseases;
- to diagnose and represent treatment plan for the most common states in occupational diseases;
- principles of expertise on the work capacity of patients with occupational diseases.

Student should be able to:

- conduct surveys and physical examinations of patients, including those with occupational diseases;
- determine the possible role and significance of harmful factors in the work environment in the development of occupational diseases;
- analyze and apply data from sanitary and hygienic characteristics to substantiate the connection between the disease and the patient's working conditions;
- address the issue of determining the group of individuals subject to mandatory pre-employment and periodic medical examinations;
- analyze the results of medical examinations, develop rational recommendations on rehabilitation, employment, and treatment of identified patients;
- identify the degree of disability in occupational diseases, select appropriate types of work for occupational patients;
- diagnose various types of pneumoconiosis, establish the diagnosis of early stages of the disease;
- determine and assess radiological changes that are specific to pneumoconiosis;
- interpret the results of the examination of the external respiratory function of a patient with pneumoconiosis;
- possess skills in functional diagnostics of vibration disease (pallesthesiometry, algometry, capillaroscopy, cold test) and evaluate their results;
- analyze and evaluate the results of audiometric research;
- determine the presence of an occupational disease caused by physical stress and overstrain of individual organs and systems;
- formulate a preliminary diagnosis in cases of occupational diseases caused by the influence of various factors in the working environment;
- prescribe treatment, develop a plan for individual preventive and rehabilitation measures for occupational diseases;
- based on the clinical picture of the disease, the degree of functional disorders, the patient's profession, and the conditions of their work, to decide on the ability to work and rational employment;
- conduct differential diagnosis between the suspected occupational disease and a non-occupational disease that has similar clinical symptoms;
- develop a plan for dispensary observation of a patient with an occupational disease.

Topic 1. Occupational diseases as a clinical discipline. History of occupational diseases. The peculiarities of occupational diseases diagnosis and the principles of their classification. Medical and social examination for occupational diseases, medical, social and labor rehabilitation

Definition, subject and tasks of “occupational diseases”, its place among clinical and hygienic sciences. Organization of occupational diseases service in Ukraine. The main stages of the development of professional pathology as a science and subject of teaching. Peculiarities of clinical examination of patients with probable occupational diseases. The importance of analyzing the patient's labor activity (professional route), establishing the influence of adverse factors of the production environment

according to the sanitary and hygienic characteristics. Solving the issue of the connection of the diagnosed disease with the action of occupational hazards (is the disease occupational or general). Accounting, registration and investigation of cases of occupational poisoning and occupational diseases in Ukraine. Classification of occupational diseases. Procedure for organizing medical examinations. Purpose and tasks of preliminary and periodic medical examinations. Medical documentation. "Resolution of the Cabinet of Ministers of Ukraine No. 294 of April 26, 2017 " On approval of the list of occupational diseases", Resolution of the Cabinet of Ministers of Ukraine No. 337 of April 17, 2019 "On approval of the Procedure for investigating and recording accidents, occupational diseases and accidents at work"

Topic 2. Pneumoconiosis. Silicosis. Silicatosis. Carboconiosis. Metalconiosis. Hypersensitive pneumonitis

Aetiology, pathogenesis, classification, clinical manifestations, diagnosis, differential diagnosis, treatment and labor expertise of pneumoconiosis. Peculiarities of different etiological types of pneumoconiosis.

Silicosis. Etiology. Pathogenesis. Stages of silicosis, clinical and radiological characteristics. Complications of silicosis (tuberculosis, spontaneous pneumothorax, bronchiectasis, etc.). Issues of rational therapy, prevention, and assessment of work capacity.

Silicatosis. General characteristics of this group of pneumoconiosis. Main clinical and radiological forms: asbestosis, talcosis, cement pneumoconiosis. Issues of fitness for work assessment and rational employment.

Carboconioses (anthracosis, graphitosis). Features of the clinical picture. Diagnosis. Issues of medical and social expertise and occupational rehabilitation.

Metalloconioses (siderosis, aluminosis, pneumoconiosis of welders and grinders). Features of the clinical picture. Diagnosis. Issuees of medical, social, and labor rehabilitation.

Hypersensitive pneumonitis – berylliosis, bisinosis. Pathogenesis. Features of clinical course. Diagnosis. Issues of medical and social expertise and occupational rehabilitation.

Topic 3. COPD caused by dust. Occupational bronchial asthma

Chronic obstructive pulmonary disease of dust etiology. Etiology. Types of industrial dust that predominantly cause the development of COPD. Pathogenesis. Classification. Features of the clinical picture and course. Complications, diagnosis. Prevention, treatment. Issues of medical and social expertise and labor.

Occupational bronchial asthma, etiology, pathogenesis, classification. Features of the clinical picture and course. Complications, diagnosis, treatment. Prevention. Issues of medical and social expertise and labor rehabilitation.

Topic 4. Intoxication with hematotropic poisons (lead, benzene, amino and nitro compounds of benzene, carbon monoxide)

Ways of entry of poison into the body. Pathogenesis. Clinical features (main syndromes), variants of the course, diagnosis. Classification of lead intoxication by severity of the course. Prevention. Treatment. Issues of medical and social expertise and labor rehabilitation.

Benzene poisoning. Routes of toxin entry into the body. Mechanism of action. Clinical features, stages of the disease. Nature of hematological changes. Issues of bone marrow transplantation. Differential diagnosis of main clinical syndromes. Therapy, including antidotal therapy. Medical and social issues.

Clinical and toxicological characteristics of the action of amino and nitro compounds of the aromatic series. Pathogenesis. Clinical picture, course, diagnosis. Prevention, treatment. Issues of assessing the daily functioning of individuals and occupational rehabilitation in cases of acute and chronic intoxications.

Topic 5. Intoxications with pesticides used in agricultural work

Professional poisoning by agricultural pesticides. Classification of pesticides. Acute and chronic poisoning by chlorine, phosphorus, mercury organic compounds, and arsenic compounds, derivatives of carbamic acids. Pathogenesis of intoxications. Clinical manifestations. Possible complications. Prevention. Therapy. Issues of medical and social examination and labor rehabilitation. **Topic 6. Vibration disease and neurosensory hearing loss. Altitude and decompression sickness**

Vibration disease. The value of vibration parameters in the development of the disease. Classification. Pathogenesis. Variants of clinical course. Differential diagnosis. Prevention. Treatment. Assessment of daily functioning of the individual and occupational rehabilitation.

Occupational diseases due to exposure to industrial noise (sensory hearing loss). Pathogenesis. Clinical manifestations. Diagnostics. Prevention. Treatment. Examination of working capacity.

Topic 7. Diseases caused by physical factors of production: altitude sickness and decompression sickness; the effects of overheating and hypothermia on the human bodyAltitude sickness and decompression sickness

Decompression sickness. Pathogenesis. Clinic. Diagnosis. Treatment. Prevention. Fitness for work assessment. Altitude sickness. Mechanism of action of reduced partial pressure of oxygen in inhaled air. Clinic. Treatment. Prevention.

Overheating, hypothermia. Conditions of their occurrence. Pathogenesis of these conditions. Clinical features, course. Prevention and treatment. Issues of medical and social examination and labor rehabilitation.

Module 5. CLINICAL IMMUNOLOGY AND ALLERGOLOGY (50 hours, 1,67 credits)

Student should know:

- the structure and principles of the functioning of the immune system;
- the structure and functional purpose of humoral and cellular factors of innate immunity;
- the structure and functional purpose of central and peripheral immune organs.
- the main stages of maturation of immunocompetent cells;
- the biological role of cellular and humoral components of acquired immunity;
- the mechanisms of cooperation of immune factors during the implementation of the immune response;
- the mechanisms of immune tolerance;
- the basics of antibacterial, antiviral, antifungal, antihelminthic, and antiprotozoal immunity;
- principles of immune-neuro-endocrine regulation of body functions; genealogical, anamnestic, clinical, and laboratory finding which are typical for various immune disorders;
- dynamic changes in laboratory indicators during different stages of the inflammatory process;
- basic principles of immunogram interpretation;
- mechanisms of maintaining immune tolerance to fetal antigens;
- ontogenesis of central and peripheral organs of the immune system;
- ontogenesis of cellular and humoral components of immunity;
- dynamics of physiological crossroads in the blood formula of the child;
- characteristics of the main critical periods in the development of a child's immune system;
- classification and immunopathogenesis of different types of allergic reactions;
- mechanisms of development of pseudo-allergic diseases;
- principles of diagnosing and differential diagnosis of allergies and pseudoallergies based on clinical-anamnestic methods;
- main immunological and allergological criteria for the differential diagnosis of allergies and pseudoallergies;
- main groups of drugs used in allergic and pseudoallergic diseases, mechanisms of action, indications and contraindications;
- concepts of "immune system dysfunction," "immunodeficiency state," "immune insufficiency";
- immunopathogenesis, classification, clinical manifestations, diagnostic criteria, and principles of treatment of immunodeficiency diseases;
- immunopathogenesis, classification, clinical manifestations, diagnostic criteria, and principles of treatment of autoimmune diseases;
- immunopathogenesis, criteria for immunodiagnosis, and principles of tumor immunotherapy;
- main types of transplants, stages of donor-recipient pair selection, mechanisms of transplant rejection, main immunosuppressive drugs used after transplantation;
- features of local and systemic immunity during pregnancy;
- classification, diagnostic criteria, and principles of treatment and prevention of immune-related forms of infertility.

Student should be able to:

- conduct surveys and physical examinations of patients, including simulations with immunological and allergic diseases;
- interpret data from genealogical trees, immunological histories, and clinical examinations of patients when assessing their immune status;
- identify and take into account the age characteristics of the immune system when interpreting clinical-immunological data;
- conduct treatment and prevention of immune system dysfunctions during various critical periods of immune system development;
- collect allergy history;
- conduct differential diagnosis of allergy and pseudoallergy based on anamnesis data;
- develop a plan for additional examination using allergological and immunological methods;
- prescribe adequate therapy, taking into account the allergic or pseudoallergic genesis of the disease;
- collect immunological history;
- apply acquired knowledge in the diagnosis and treatment of immune system dysfunctions, autoimmune diseases, justify prognosis;
- identify post-transplant complications;
- develop a plan and interpret the results of laboratory examinations of the couple in case of suspected immune-related infertility;
- general principles for prescribing preventive measures, planning outpatient monitoring for patients with immune-related diseases.

Topic 1. Theoretical basics of clinical immunology. Humoral factors of innate immunity

Clinical immunology as a clinical discipline. The subject and tasks of clinical immunology. The concept of immunity. The purpose and classification of innate immunity factors. The role of the complement system in the immune defense of the organism. The role of the kallikrein-kinin system in the immune defense of the body.

Topic 2. Theoretical basics of clinical immunology. Cellular factors of innate immunity

Structure and functions of macrophages in the immune defense of the body. Structure and functions of dendritic cells in the immune defense of the body. Structure and functions of granulocytes, platelets, and erythrocytes in the immune defense of the body. Structure and functions of natural killers in the immune defense of the body.

Topic 3. Theoretical basics of clinical immunology. Acquired immunity

The role of acquired immunity factors in protection against pathogens. The structure and functions of the acquired immune system. The strategy and tactics of pathogen recognition by acquired immunity factors. The cytokine system of the organism. Antigens of the major histocompatibility complex. The mechanism of immune response.

Topic 4. Evaluation of immune status. Methods of laboratory investigation in immunology

Principles of assessing immune status. Diagnostic levels of laboratory assessment of immune status. Laboratory methods for studying lymphocytes. Evaluation of phagocytosis. Basic methods for determining antigens and antibodies. Methods for investigating components of the complement system. Principles of an immunogram interpretation in practice of clinical immunologists.

Topic 5. Basics of age-related immunology. Ontogenesis of organs of the immune system and factors of immune protection. Dysfunctions of the immune system

Mechanisms of maintaining tolerance to fetal antigens. Prenatal period of immune system development. Ontogeny of central and peripheral immune organs. Critical periods of immune system formation. Thymomegaly. The role of age-related involution of the thymus in immune reactivity. Definition, classification, clinical manifestations of immune system dysfunctions.

Topic 6. Primary immunodeficiency

Definition, classification, clinical manifestations of immune system dysfunctions. Primary immunodeficiency diseases related to the damage of the cellular immune component, humoral component, combined defects, phagocytosis disorders, complement protein deficiencies.

Topic 7. Secondary immunodeficiency

Secondary (acquired) immunodeficiencies. Principles of treatment for immunodeficiency diseases. Vaccination of patients with immunodeficiency diseases.

Classification, main properties, principles of prescribing the main groups of immunotropic agents (thymic group, synthetic, natural preparations, interferons, vaccines etc.).

Topic 8. Immunology of tumors. Basics of transplant immunity. Reproductive immunology

Modern theories of tumor development. Etiology, immunopathogenesis, clinical aspects, diagnostic criteria, and immunotherapy of tumors. Main types of transplantation. Stages of donor-recipient pair selection. Mechanisms of transplant rejection. Management of patients after transplantation.

Classification of immune-dependent forms of infertility. Etiopathogenesis, clinical features, diagnosis, treatment, and prevention of immune-dependent forms of infertility.

Topic 9. Theoretical foundations of clinical allergology. Differential diagnosis of allergy and pseudoallergy.

Types of immune reactions and hypersensitivity reactions (according to Gell and Coombs). Risk factors for the development of allergic diseases. Classification of allergens. Immunopathogenesis of allergic diseases. Methodology for collecting an allergic history. Skin and provocative allergy tests. Mechanisms of pseudoallergic reaction development. Principles of diagnosis and differential diagnosis of pseudoallergies. Main groups of drugs for the treatment of allergies and pseudoallergies. Mechanisms of action, indications, and contraindications for the appointment of anti-allergic drugs (glucocorticoids, antihistamines, mast cell stabilizers, etc.).

Topic 10. Anaphylactic shock. Urticaria. Angioedema

Definition, etiopathogenesis, and clinical aspects of different types of anaphylactic shock. Diagnosis, differential diagnosis, and treatment of anaphylactic shock. Definition, etiopathogenesis, classification, and clinical aspects of urticaria and angioedema. Diagnosis, differential diagnosis, and treatment of urticaria and angioneurotic edema. Features of diagnosis and treatment of congenital Quincke edema.

Topic 11. Drug allergy

Classification of side effects of medications. Mechanisms of hypersensitivity reactions when using medications. Allergy to penicillins. Allergy to non-steroidal anti-inflammatory drugs.

Allergy to iodine-containing radiopaque agents. Allergy to antihypertensive medications (ACE inhibitors, beta-blockers, etc.). Diagnosis and treatment methods for drug allergy.

Topic 12. Food allergy and insect allergy

Definition, etiopathogenesis, classification, clinic, diagnosis, differential diagnosis, and treatment of food and insect allergy.

Topic 13. Pollinosis. Allergic rhinitis. Allergic alveolitis.

Definition, etiopathogenesis, classification, clinic, diagnosis, differential diagnosis, and treatment of pollinosis. Definition, etiopathogenesis, classification, clinic, diagnosis, differential diagnosis, and treatment of allergic rhinitis. Definition, etiopathogenesis, classification, clinic, diagnosis, differential diagnosis, and treatment of an allergic alveolitis.

Module 6. CLINICAL PHARMACOLOGY (26 hours, 0,87 credit)

Student should know:

- modern classifications of medicinal products,
- features of clinical pharmacokinetics, pharmacodynamics, side effects, and interactions of the main groups of medicinal products (MP);
- principles of drug interactions in their combined administration;
- main parameters of drug pharmacokinetics;
- main types and advantages of dosage forms, principles of drug dosage selection;
- methods of clinical and laboratory research for evaluating the effectiveness and safety of drug prescriptions;
- principles of collecting medical history;
- principles of evidence-based medicine, formulary medicine, treatment standards for the most common human diseases.

- possible side effects and symptoms of overdose when using medications, methods of their prevention and treatment;
- features of medication use in medical practice;
- characteristics of interactions between drugs of the main groups;
- indicate and analyze the use of medications in providing emergency assistance.

Student should be able to:

- conduct a survey of patients in order to collect medical history and predict the potential complications of drug therapy;
- **s**elect the required medicines, adequate dosage form and dose mode in the appointment of patients with major pathological syndromes;
- identify the basic methods of clinical investigation of patients to assess the efficacy and safety of prescribing and analyze their results;
- apply basic parameters of pharmacokinetics for the rational prescribing;
- interpret and considered in clinical practice, clinical features of pharmacokinetics, pharmacodynamics, side effects and interactions of major groups of drugs;
- predict the effects drug interactions when combined to use and have skills of prevention and correction of adverse effects of medicines;
- prescribe and conduct a pharmacotherapeutic analysis of the prescribed medications;
- explain the dependence of drug action on the pharmacokinetic characteristics in patients of different ages, comorbidities, and adjunctive therapy;
- provide urgent assistance to patients in cases of acute poisoning with medications;
- administer urgent differentiated pharmacotherapy in emergency situations: hypertensive crises, acute hypotensive states, chest pain, acute heart failure, pulmonary edema, acute heart rhythm disturbances, diabetic comas, bronchial asthma attacks, acute allergic conditions, fainting, hemostatic disorders, bleeding, etc.

Topic 1. The subject and tasks of clinical pharmacology. Basic principles of pharmacokinetics and pharmacodynamics. Clinical-pharmacological characteristics of lipid-lowering drugs

Determination of clinical pharmacology as a subject, sections of Clinical Pharmacology. Factors affecting the clinical effectiveness of drugs. Administration, distribution, biotransformation, and elimination of medicinal substances. Mechanism of action of medicinal compounds, their pharmacological effects, and changes in the state of bodily functions in response to the influence of medicinal preparations

Classification of hypolipidemic drugs. Types of dyslipidemia according to Friedewald. Statins. Ezetimibe. PCSK9 inhibitors. Fibrates. Niacin. Omega-3. Dosage regimen, interaction with other drug groups, target cholesterol level depending on cardiovascular risk. Assessment of effectiveness. Safety usage. Side effects of the medications.

Topic 2. Clinical pharmacology of antihypertensive drugs

Principles of antihypertensive treatment. Indications for drug treatment. Classification of antihypertensive medications. Justification for the choice of medication depending on cardiovascular risk according to SCORE-2, SCORE-2-DIABETES, stage, and degree of hypertension. Characteristics of first and second line medications. ACE inhibitors, angiotensin-2 receptor blockers, calcium antagonists, diuretics, beta-blockers. Comparative characteristics of medications regarding effectiveness and selection criteria, compatibility of drugs in different course variants and presence of accompanying pathology. Indications, contraindications, side effects. Typical treatment regimen for hypertension and modifications in the presence of coronary heart disease, diabetes mellitus, chronic kidney disease, heart failure. Emphasis on dual and triple combinations. Medications used for resistant hypertension. Antihypertensive drugs for emergency assistance. Basic principles of treating hypertensive crises. Classification and mechanisms of action of medications that lower blood pressure in emergency settings.

Topic 3. Clinical pharmacology of antianginal and anti-ischemic drugs

Classification of antianginal (anti-ischemic) drugs. Features of the combined use of medications (beta-blockers and calcium channel blockers, organic nitrates), if-channel blockers, antianginal drugs that belong to pharmacological groups that affect metabolism in myocardium: nicorandil, ranolazine,

trimetazidine. Dosage regimen. Indications and contraindications for prescription. Tolerance and withdrawal syndromes. Sidnonimines. Prognosis-modifying drug therapy for ischemic heart disease.

Topic 4. Clinical pharmacology of drugs that affect the blood's ability to clot

Medicinal products that affect blood coagulation and fibrinolysis: agents that stimulate platelet adhesion and aggregation, agents that increase the formation of fibrin thrombi. Mechanism of action and side effects when using direct anticoagulants. Features of using unfractionated heparin.

Advantages of low molecular weight heparins. New oral anticoagulants: direct thrombin inhibitors and factor Xa inhibitors. Indications, contraindications, possible side effects. Antiplatelet drugs: aspirin, clopidogrel, ticagrelor, prasugrel. Mechanism of action. Features of use in patients with various pathologies. Duration of use and contraindications. Fibrinolytics: enzyme preparations and recombinant tissue plasminogen activators. Possible complications of fibrinolytic therapy.

Topic 5. Clinical pharmacology of antiarrhythmic drugs

Principles of treating bradyarrhythmias and tachyarrhythmias. Concepts of action potential in conducting cardiomyocytes. 4 classes of antiarrhythmic agents. Mechanisms of action, pharmacological effects, indications, and contraindications of the main antiarrhythmic medications. Comparative characteristics of individual pharmacological groups.

Features of choosing drugs for rhythm restoration, rhythm control, and heart rate control. Interaction of antiarrhythmic drugs with each other and with drugs from other pharmacological groups. Assessment of the effectiveness and safety usage: concepts of proarrhythmic action and QT interval control.

The role of cardiac glycosides in arrhythmias. Dosage regimen. Indications, contraindications, possible side effects, and signs of drug intoxication.

Topic 6. Clinical pharmacology of heart failure

Mechanism of action, indications, contraindications, and side effects of diuretics. Evidence-based medications for the treatment of HFrEF and HFpEF: SGLT2 inhibitors and finerenone. The basic 4-component therapy for HFrEF: SGLT2 inhibitors, mineralocorticoid receptor antagonists, beta-blockers, sacubitril/valsartan, and ACE inhibitors/ARB. Features of appointment, titration, and achieving target doses.

Topic 7. Clinical pharmacology of antibiotics

Principles of modern antibacterial therapy. Classification of antibiotics. The role of antibiotics and chemotherapeutic agents in infectious and purulent-inflammatory diseases. Selection of antibacterial agents according to the sensitivity of microorganisms and localization of processes, severity of the disease course. Side effects and contraindications for antibacterial therapy. Selection of antibacterial medication based on pharmacokinetics. Age-related features of antibacterial therapy.

Antibiotic resistance and ways to overcome it. Antiviral agents (vaccines, interferons, synthetic antiviral drugs). Antifungal agents (antifungal antibiotics, imidazoles, triazoles, others).

Topic 8. Clinical pharmacology of bronchodilators

Modern concepts of the etiology and pathogenesis of bronchial obstruction syndrome. Classification of drugs affecting bronchial patency. Pharmacokinetics and pharmacodynamics. Dosage regimen.

Features of their combined use with inhaled glucocorticoids. Therapeutic efficacy of beta-2 agonists, M-cholinoblockers. Selection of bronchodilator medications for relieving an asthma attack, basic therapy for asthma, and systematic therapy for COPD, including consideration of comorbidity.

Comparative characteristics of their therapeutic value. Auxiliary devices for the delivery of inhaled medications: mouthpieces, spacers, nebulizers. Methods for assessing the effectiveness and safety of therapy, taking into account the degree of bronchial obstruction, the viscosity of sputum, and the state of central and peripheral hemodynamics.

Methylxanthines as an old generation means for the treatment of bronchial obstruction syndromes.

Topic 9. Clinical pharmacology of anti-inflammatory drugs (non-steroidal anti-inflammatory drugs (NSAIDs) and corticosteroids)

Classification of steroid and non-steroid anti-inflammatory drugs. Modern understanding of mechanisms of action. Comparative characteristics of the anti-inflammatory efficacy of drugs. Indications and contraindications for use.

Pharmacokinetic and pharmacodynamic characteristics of drugs. Schemes for prescribing corticosteroids. Compatibility of drugs in combined therapy for diseases. Side effects, methods for monitoring the effectiveness and safety of treatment, and methods for their prevention.

Topic 10. Clinical pharmacology of new antidiabetic drugs

Mechanism of action, indications, contraindications, and side effects of the use of biguanides, sulfonylurea derivatives, GLP-1 receptor agonists, DPP-4 inhibitors, and thiazolidinediones. Insulin therapy: types of insulin by origin, duration of action. Insulin therapy regimens. Dosage adjustment. Complications of insulin therapy.

Topic 11. Clinical pharmacology of medications that affect the digestive tract

Definition of the principles of pharmacotherapy for gastric and duodenal ulcers, gastritis, colitis, irritable bowel syndrome, gastroesophageal reflux disease. The significance of medications that affect the secretory function of the stomach (proton pump inhibitors, H2-histamine blockers, M-cholinoblockers, stimulating secretory function). Eradication therapy for H. pylori (medications, doses, duration).

Gastrocytoprotectors. Pharmacological regulation of gastrointestinal motility. The importance of symptomatic agents: antiemetics and emetics, laxatives and anti-diarrheal. Dosage regimen. Modern principles of prevention and treatment of intestinal dysbiosis. Modern principles of treatment for acute and chronic cholecystitis, hepatitis, pancreatitis. Justification for the choice and characteristics of drugs with enzymatic and anti-enzymatic properties. Features of the combined use of medications. Pharmacokinetics and pharmacodynamics of choleretics, cholekinetics, hepatoprotectors, and antispasmodics.

Topic 12. Interaction of medications, side effects of drugs, complications of drug therapy

Interaction of medications in complex medical therapy: types and nature of interaction manifestation. Clinical manifestations of drug interactions. Combined medications. Advantages and disadvantages of combined drugs.

Types of side effects of medications, complications of drug therapy. Classification of types of side effects of medications, main types of side reactions and complications of medical therapy.

Adverse reactions related to pharmacological activity. Toxic complications. Disorders of the immunobiological properties of the body. Allergic and pseudoallergic reactions. Idiosyncrasy. Clinical manifestations of the side effects of medications.

6.2. The structure of the discipline

Titles of content modules and topics	Number of hours					
	Form of study: daytime					
	Total	including				
		lectures	practical classes (seminars	laboratory classes	Individual work	Self-study
MODULE 1-3. INTERNAL MEDICINE (CARDIOLOGY, RHEUMATOLOGY, NEPHROLOGY)						
Module 1. Principles of diagnosis, treatment and prevention of major cardiovascular diseases						
Topic 1. Essential hypertension (Hypertensive disease)	8	2	-	4	-	2
Topic 2. Essential hypertension (Hypertensive disease)	6	-	-	4	-	2

Topic 3. Secondary (symptomatic) arterial hypertension	6	-	-	4	-	2
Topic 4. Atherosclerosis	8	2	-	4	-	2
Topic 5. Coronary heart disease (CHD), acute myocardial infarction	7	1	-	4	-	2
Topic 6. Chronic forms of coronary artery disease	7	1	-	4	-	2
Topic 7. Pulmonary embolism and cor pulmonale	6	-	-	4	-	2
Topic 8. Infective endocarditis	6	-	-	4	-	2
Topic 9. Myocarditis	7	1	-	4	-	2
Topic 10. Cardiomyopathies	7	1	-	4	-	2
Topic 11. Pericarditis	6	-	-	4	-	2
Topic 12. Congenital and acquired (valvular) heart disease in adults	6	-	-	4	-	2
Topic 13. Acute and chronic heart failure	8	2	-	4	-	2
Topic 14. Heart rhythm disturbances	6	-	-	4	-	2
Topic 15. Conduction disturbances	6	-	-	4	-	2
Total for M 1	**100**	**10**	**-**	**60**	**-**	**30**
Module 2. Principles of diagnosis, treatment and prevention of major diseases of bones and systemic rheumatic disorders						
Topic 1. Symptoms and syndromes of common rheumatic disorders	5	-	-	4	-	1
Topic 2. Acute Rheumatic Fever	5	-	-	4	-	1
Topic 3. Rheumatoid arthritis	8	2	-	4	-	2
Topic 4. Systemic lupus erythematosus	7	1	-	4	-	2
Topic 5. Systemic sclerosis. Dermatopolymyositis	7	1	-	4	-	2
Topic 6. Systemic vasculitis	6	-	-	4	-	2
Topic 7. Osteoarthritis	8	2	-	4	-	2
Topic 8. Ankylosing Spondylitis	6	-	-	4	-	2
Topic 9. Reactive arthritis	7	1	-	4	-	2
Topic 10. Gout. Pseudogout	7	1	-	4	-	2
Total for M 2	**64**	**6**	**-**	**40**	**-**	**18**
Module 3. Principles of diagnosis, treatment and prevention of major diseases of the genitourinary system						
Topic 1. Glomerulonephritis. Renal amyloidosis	8	2	-	4	-	2

Topic 2. Pyelonephritis. Tubulo-interstitial nephritis	6	-	-	4	-	2
Topic 3.Acute and chronic renal failure	6	2	-	2	-	2
Total for M 3	**20**	**4**	**-**	**10**	**-**	**6**
Total for Ms 1-3	**184**	**20**	**-**	**110**	**-**	**54**
Simulation training				31		

Module 4. OCCUPATIONAL DISEASES						
Titles of content modules and topics	Number of hours					
	Form of study: daytime					
	Total	including				
		lectures	practical classes (seminars)	laboratory classes	Individual work	Self-study
Topic 1. Occupational diseases as a clinical discipline. History of occupational diseases. The peculiarities of occupational diseases diagnosis and the principles of their classification. Medical and social examination for occupational diseases, medical, social and labor rehabil-itation.	4	-	-	2	-	2
Topic 2. Pneumoconiosis. Silicosis. Silicatosis. Carboconiosis. Metalconiosis. Hypersensitive pneumonitis	7	2	-	2	-	3
Topic 3. COPD caused by dust. Occupational bronchial asthma	5	-	-	2	-	3
Topic 4. Intoxication with hematotropic poisons (lead, benzene, amino and nitro compounds of benzene, carbon monoxide)	5	-	-	2	-	3
Topic 5. Intoxications with pesticides used in agricultural work	3	-	-	2	-	1
Topic 6. Vibration disease and neurosensory hearing loss. Altitude and decompression sickness.	7	2	-	2	-	3
Topic 7. Diseases caused by physical factors of production: altitude sickness and decompression sickness; the effects of overheating and hypothermia on the human body	6	2	-	1	-	3
Final module testing	3			1		2
Total for M 4	**40**	**6**	**-**	**14**	**-**	**20**

Simulation training				4		
Module 5. Clinical immunology and allergology						
Titles of content modules and topics	Number of hours					
	Form of study: daytime					
	Total	including				
		lectures	practical classes (seminars)	laboratory classes	Individual work	Self-study
Topic 1. Theoretical basics of clinical immunology. Humoral factors of innate immunity	4,5	0,5	-	2	-	2
Topic 2. Theoretical basics of clinical immunology. Cellular factors of innate immunity	4,5	0,5	-	2	-	2
Topic 3. Theoretical basics of clinical immunology. Acquired immunity	5	1	-	2	-	2
Topic 4. Evaluation of immune status. Methods of laboratory investigation in immunology	3	-	-	2	-	1
Topic 5. Basics of age-related immunology. Ontogenesis of organs of the immune system and factors of immune protection. Dysfunctions of the immune system	3	-	-	2	-	1
Topic 6. Primary immunodeficiency	3	-	-	2	-	1
Topic 7. Secondary immunodeficiency	3	-	-	2	-	1
Topic 8. Immunology of tumors. Basics of transplant immunity. Reproductive immunology.	4	-	-	2	-	2
Topic 9. Theoretical foundations of clinical allergology. Differential diagnosis of allergy and pseudoallergy.	5	2	-	2	-	1
Topic 10. Anaphylactic shock. Urticaria. Angioedema	4	-	-	2	-	2
Topic 11. Drug allergy	4	-	-	2	-	2
Topic 12. Food allergy and insect allergy	3	-	-	2	-	1
Topic 13. Pollinosis. Allergic rhinitis. Allergic alveolitis.	4	-	-	2	-	2
Total for M 5	**50**	**4**	**-**	**26**	**-**	**20**
Simulation training (Module 5)				7		
Module 6. Clinical Pharmacology						

Titles of content modules and topics	Number of hours					
	Form of study: daytime					
	Total	including				
		lectures	practical classes (seminars)	laboratory classes	Individual work	Self-study
Topic 1. The subject and tasks of clinical pharmacology. Basic principles of pharmacokinetics and pharmacodynamics. Clinical-pharmacological characteristics of lipid-lowering drugs	2	-	-	2	-	-
Topic 2. Clinical pharmacology of antihypertensive drugs	2	-	-	2	-	-
Topic 3. Clinical pharmacology of antianginal and anti-ischemic drugs	2	-	-	2	-	-
Topic 4. Clinical pharmacology of drugs that affect the blood's ability to clot.	2	-	-	2	-	-
Topic 5. Clinical pharmacology of antiarrhythmic drugs	2	-	-	2	-	-
Topic 6. Clinical pharmacology of heart failure	2	-	-	2	-	-
Topic 7. Clinical pharmacology of antibiotics	2	-	-	2	-	-
Topic 8. Clinical pharmacology of bronchodilators	2	-	-	2	-	-
Topic 9. Clinical pharmacology of anti-inflammatory drugs (non-steroidal anti-inflammatory drugs (NSAIDs) and corticosteroids)	2	-	-	2	-	-
Topic 10. Clinical pharmacology of new antidiabetic drugs	2	-	-	2	-	-
Topic 11. Clinical pharmacology of medications that affect the digestive tract	3	-	-	-	-	3
Topic 12. Interaction of medications, side effects of drugs, complications of drug therapy.	3	-	-	-	-	3
Total for M 6	**26**	**-**	**-**	**20**	**-**	**6**
Simulation training (Module 6)				5		

6.3. Topics of laboratory classes

TOPICS OF LABORATORY CLASSES FOR MODULE 1

№ .	Topic title	Number of hours	
		Full-time study	Extramural form of study
1	Essential hypertension (Hypertensive disease)	4	
2	Essential hypertension (Hypertensive disease) (simulation training)	4	
3	Secondary (symptomatic) arterial hypertension	4	
4	Atherosclerosis	4	
5	Coronary heart disease (CHD), acute myocardial infarction (simulation training)	4	
6	Chronic forms of coronary artery disease (simulation training)	4	
7	Pulmonary embolism and cor pulmonale (simulation training)	4	
8	Infective endocarditis	4	
9	Myocarditis (simulation training)	4	
10	Cardiomyopathies	4	
11	Pericarditis	4	
12	Congenital and acquired (valvular) heart disease	4	
13	Acute and chronic heart failure (simulation training)	4	
14	Heart rhythm disturbances (simulation training)	4	
15	Conduction heart disturbances (simulation training)	4	
	Total	**60**	
	Simulation training	**16**	

TOPICS OF LABORATORY CLASSES FOR MODULE 2

№ .	Topic title	Number of hours	
		Full-time study	Extramural form of study
1	Symptoms and syndromes of common rheumatic disorders	4	

2	Acute Rheumatic Fever	4	
3	Rheumatoid arthritis (simulation training)	4	
4	Systemic lupus erythematosus (simulation training)	4	
5	Systemic sclerosis. Dermatopolymyositis	4	
6	Systemic vasculitis (simulation training)	4	
7	Osteoarthritis (simulation training)	4	
8	Ankylosing Spondylitis (simulation training)	4	
9	Reactive arthritis	4	
10	Gout. Pseudogout (simulation training)	4	
	Total	**40**	
	Simulation training	**11**	

TOPICS OF LABORATORY CLASSES FOR MODULE 3

№ .	Topic title	Number of hours	
		Full-time study	Extramural form of study
1	Glomerulonephritis. Renal amyloidosis (simulation training)	4	
2	Pyelonephritis. Tubulo-interstitial nephritis	4	
3	Acute and chronic renal failure (simulation training)	2	
	Total	**10**	
	Simulation training	**4**	

TOPICS OF LABORATORY CLASSES FOR MODULE 4

№ .	Topic title	Number of hours	
		Full-time study	Extramural form of study

1.	Occupational diseases as a clinical discipline. History of occupational diseases. The peculiarities of occupational diseases diagnosis and the principles of their classification. Medical and social examination for occupational diseases, medical, social and labor rehabilitation	2	
2.	Pneumoconiosis. Silicosis. Silicatosis. Carboconiosis. Metalconiosis. Hypersensitive pneumonitis (simulation training)	2	
3.	COPD caused by dust. Occupational bronchial asthma	2	
4.	Intoxication with hematotropic poisons (lead, benzene, amino and nitro compounds of benzene, carbon monoxide) (simulation training)	2	
5.	Intoxications from pesticides used in agricultural work	2	
6.	Vibration disease and neurosensory hearing loss. Altitude and decompression sickness.	2	
7.	Diseases caused by physical factors of production: altitude sickness and decompression sickness; the effects of overheating and hypothermia on the human body	1	
	Final module testing	1	
	Total	**14**	
	Simulation training	**4**	

TOPICS OF LABORATORY CLASSES FOR MODULE 5

№ .	Topic title	Number of hours	
		Full-time study	Extramural form of study
1	Theoretical basics of clinical immunology. Humoral factors of innate immunity	2	
2.	Theoretical basics of clinical immunology. Cellular factors of innate immunity	2	
3.	Theoretical basics of clinical immunology. Acquired immunity	2	
4.	Evaluation of immune status. Methods of laboratory investigation in immunology (simulation training)	2	
5 .	Basics of age-related immunology. Ontogenesis of organs of the immune system and factors of immune protection. Dysfunctions of the immune system	2	

6.	Primary immunodeficiency	2	
7.	Secondary immunodeficiency (simulation training)	2	
8.	Immunology of tumors. Basics of transplant immunity. Reproductive immunology.	2	
9.	Theoretical foundations of clinical allergology. Differential diagnosis of allergy and pseudoallergy.	2	
10.	Anaphylactic shock. Urticaria. Angioedema (simulation training)	2	
11.	Drug allergy (simulation training)	2	
12.	Food allergy and insect allergy	2	
13.	Pollinosis. Allergic rhinitis. Allergic alveolitis.	2	
Total		**26**	
Simulation training		**7**	

TOPICS OF LABORATORY CLASSES FOR MODULE 6

№ .	Topic title	Number of hours	
		Full-time study	Extramural form of study
1.	The subject and tasks of clinical pharmacology. Basic principles of pharmacokinetics and pharmacodynamics. Clinical-pharmacological characteristics of lipid-lowering drugs	2	
2.	Clinical pharmacology of antihypertensive drugs	2	
3.	Clinical pharmacology of antianginal and anti-ischemic drugs	2	
4.	Clinical pharmacology of drugs that affect the blood's ability to clot.	2	
5.	Clinical pharmacology of antiarrhythmic drugs	2	
6.	Clinical pharmacology of heart failure (simulation training)	2	
7.	Clinical pharmacology of antibiotics	2	
8.	Clinical pharmacology of bronchodilators (simulation training)	2	

9.	Clinical pharmacology of anti-inflammatory drugs (non-steroidal anti-inflammatory drugs (NSAIDs) and corticosteroids) (simulation training)	2	
10.	Clinical pharmacology of new antidiabetic drugs	2	
Total		**20**	
Simulation training		**5**	

6.4. Self-study
Module 1: Topics for Self-learning and individual work.

No	Topic	Number of hours
1.	Preparing for the laboratory class “Essential hypertension”. Mastering the skills of registration and ECG interpretation. Mastering the skills of BP measurement. Provide emergency care for Hypertensive crisis.	4
2.	Preparing for the laboratory class “Secondary (symptomatic) arterial hypertension”. Mastering the skills of echocardiography interpretation. Mastering the skills of ECG interpretation.	2
3.	Preparing for the laboratory class “Atherosclerosis”. Mastering the skills of lipid profile interpretation.	2
4	Preparing for the laboratory class “Coronary heart disease (CHD), acute myocardial infarction”. Mastering the skills of ECG interpretation. Mastering the skills of myocardial injury biomarkers interpretation.	2
5.	Preparing for the laboratory class “Chronic forms of coronary artery disease” Mastering the skills of ECG interpretation.	2
6.	Preparing for the laboratory class “Pulmonary embolism and cor pulmonale”. Mastering the skills of echocardiography interpretation. Mastering the skills of coagulation panel and D-dimer level interpretation.	2
7.	Preparing for the laboratory class “Congenital and acquired (valvular) heart disease in adults”. Mastering the skills of echocardiography interpretation. Mastering the skills of Chest X-ray interpretation. Mastering the skills of ECG interpretation.	2
8.	Preparing for the laboratory class “Infective endocarditis” Mastering the skills of echocardiography interpretation. Mastering the skills of blood culture and serologic evidence of an active infection interpretation.	2
9.	Preparing for the laboratory class “Myocarditis and Cardiomyopathies”. Mastering the skills of echocardiography, MRI interpretation. Mastering the skills of biochemical blood test interpretation.	4
10.	Preparing for the laboratory class “Pericarditis”. Mastering the skills of echocardiography interpretation.	2

	Mastering the skills of biochemical blood test interpretation.	
11.	Preparing for the laboratory class "Conduction rhythm disturbances". Mastering the skills of ECG / Holter interpretation.	2
12.	Preparing for the laboratory class "Heart rhythm disturbances". Mastering the skills of ECG interpretation.	2
13.	Preparing for the laboratory class "Chronic Heart failure". Mastering the skills of BNP/NT-proBNP analysis interpretation. Mastering the skills of echocardiography interpretation.	2
	Total	**30**

Module 2: Topics for Self-learning and individual work.

No	Topic	Number of hours
1.	Preparing for the laboratory class "Basic rheumatological symptoms and research methods in rheumatology. Rheumatic Fever.". Mastering the skills of acute phase biochemical blood test interpretation (CRP hs, ASO titer, total protein and protein fractions). Mastering the basic research methods in rheumatology.	2
2.	Preparing for the laboratory class "Systemic connective tissue diseases: systemic lupus erythematosus. Systemic connective tissue diseases: Systemic sclerosis and dermatopolymyositis". Mastering the skills of interpreting biochemical blood tests (CRP hs, total protein and protein fractions, CFC). Mastering the skills of interpreting the results of an immunological blood test (SCL70, Jo-1). Mastering the skills of interpreting the results of an immunological blood test (ANA, dsDNA , Sm -antigen).	4
3.	Preparing for the laboratory class "Systemic vasculitis". Mastering the skills of immunological panel interpretation (CRP hs, total protein and protein fractions, creatinine, pANCA , cANCA , HbsAg).	2
4	Preparing for the laboratory class "Rheumatoid arthritis" Mastering the skills of immunological panel interpretation (anti-CCP, rheumatoid factor). Mastering the skills of X-ray interpretation.	2
5.	Preparing for the laboratory class "Osteoarthritis". Mastering the skills of X-ray interpretation.	2
6.	Preparing for the laboratory class "Gout". Mastering the skills of acute phase biochemical blood test interpretation (CRP hs, uric acid). Mastering the skills of synovial tissue analysis. Mastering the skills of X-ray interpretation.	2
7.	Preparing for the laboratory class "Ankylosing Spondylitis. Reactive arthritis". Mastering the skills of serologic blood test interpretation Mastering the skills of X-ray, MRI interpretation.	4
	Total	**18**

Module 3: Topics for self-study.

No	Topic	Number of hours
1.	Preparing for the laboratory class " Glomerulonephritis. Renal amyloidosis". Mastering the skills of interpreting the results of laboratory research methods (general urinalysis, daily proteinuria, general blood analysis, total protein and protein fractions, creatinine, glomerular filtration rate, cholesterol, blood electrolytes). Mastering the skills of interpreting kidney ultrasound results by topic.	2
2.	Preparing for the laboratory class" Pyelonephritis. Tubulointerstitial nephritis". Mastering the skills of interpreting the results of laboratory research methods (general urinalysis, urinalysis according to O.Z. Nechyporenko and S.S. Zimnytskyi , microbiological examination of urine, creatinine, glomerular filtration rate, uric acid).	2
3.	Preparing for the laboratory class"Acute kidney injury. Chronic kidney disease". Mastering the skills of interpreting the results of laboratory research methods (general urinalysis, general blood analysis, total protein and protein fractions, creatinine, glomerular filtration rate, blood electrolytes, albumin/creatinine content of urine).	2
	Total	**6**

Module 4: Topics for self-study and individual work.

No	Topic	Number of hours
1.	Occupational diseases as a clinical discipline. History of occupational diseases. The peculiarities of occupational diseases diagnosis and the principles of their classification. Medical and social examination for occupational diseases, medical, social and labor rehabilitation	2
2.	Pneumoconiosis. Silicosis. Silicatosis. Carboconiosis. Metalconiosis. Hypersensitive pneumonitis	3
3.	COPD caused by dust. Occupational bronchial asthma	3
4	Intoxication with hematotropic poisons (lead, benzene, amino and nitro compounds of benzene, carbon monoxide)	3
5.	Intoxications from pesticides used in agricultural work	1
6.	Vibration disease and neurosensory hearing loss. Altitude and decompression sickness.	3
7.	Diseases caused by physical factors of production: altitude sickness and decompression sickness; the effects of overheating and hypothermia on the human body	3
	Final module testing	2
	Total	**20**

Module 5: Topics for self-study and individual work.

No.	Topic	Number of hours
1	Preparing for the laboratory class "Theoretical basics of Clinical Immunology. Humoral Factors of Innate Immunity" Mastering the skills of immunological term interpretation	2

2	Preparing for the laboratory class " Theoretical basics of Clinical Immunology. Cellular Factors of Innate Immunity"	2
3	Preparing for the laboratory class " Theoretical basics of Clinical Immunology. Acquired immunity"	2
4	Preparing for the laboratory class "Evaluation of immune status. Methods of laboratory investigation in immunology". Mastering the skills of immunograms interpretation	1
5	Preparing for the laboratory class "Basics of age-related immunology. Ontogenesis of organs of the immune system and factors of immune protection. Dysfunctions of the immune system ". Mastering the skills of immunological indicators interpretation	1
6	Preparing for the laboratory class "Primary immunodeficiency". Mastering the skills of immunograms interpretation in patients with primary immunodeficiency	1
7	Preparing for the laboratory class "Secondary immunodeficiency. Immunotherapy, immunorehabilitation, immunoprophylaxis". Mastering the skills of immunograms interpretation under the influence of immunotherapy in dymanic	1
8	Preparing for the laboratory class "Immunology of tumors. Basics of transplant immunity. Reproductive immunology". Mastering the skills of phenotyping the donor-recipient pair interpretation	2
9	Preparing for the laboratory class " Theoretical foundations of clinical allergology. Differential diagnosis of allergy and pseudoallergy". Mastering the skills of skin allergy tests interpretation	1
10	Preparing for the laboratory class "Anaphylactic shock. Urticaria. Angioedema". Mastering the emergency care skills for anaphylaxis. Mastering the diagnostic skills for urticaria of various etiologies	2
11	Preparing for the laboratory class "Drug allergy"	2
12	Preparing for the laboratory class "Food allergy and insect allergy"	1
13	Preparing for the laboratory class "Pollinosis. Allergic rhinitis. Allergic alveolitis."	2
	Total	**20**

Module 6: Topics for self- self-study and individual work.

№ .	Topic title	Number of hours	
		Full-time study	Extramural form of study
1.	Clinical pharmacology of medications that affect the digestive tract	3	
2.	Interaction of medications, side effects of drugs, complications of drug therapy.	3	
Total		**6**	

7. TOOLS, EQUIPMENT AND SOFTWARE THE USE OF WHICH IS PROVIDED FOR THE EDUCATIONAL SUBJECT

The styding discipline "Internal medicine II, including clinical pharmacology, clinical immunology and allergology, occupational diseases" involves the curation of patients. For the educational process, devices are used to measure blood pressure, pulse oximeters, thermometers, spatulas, rapid test systems, stethoscopes, electrocardiographs, echocardiographs, Holter ECG monitoring systems, 24-hour blood pressure monitoring systems, peak flow meters, electric stimulators, and mannequins.

Students also get acquainted with the work of the catheterization laboratory, electrophysiological laboratory and endoscopic room. In addition, didactic materials are used:

- plans for practical classes
- individual work of the students
- methodological instructions/recommendations for students and teachers
- treatment algorithms and emergency assistance (according to evidence-based medicine standards)
- algorithms for performing practical skills, medical procedures, video films
- results of laboratory and instrumental research methods
- models, phantoms
- questions, tasks, assignments or cases for current and final assessment
- electronic bank of test tasks, bank of test tasks on paper media, situational tasks
- software: a computer program for testing X-TLS with an open license
- UzhNU e-learning website e-learn.uzhnu.edu.ua.

8. RECOMMENDED SOURCES OF INFORMATION

Information Resources for Module 1-3

1. Davidson's Principles and Practice of Medicine / Edited by Stuart H Ralston, Ian D Penman, Mark WJ Strachan, Richard P Hobson, 23 edition. – Elsevier, 2018. – 1440 p.
2. Harrison's Principles of Internal Medicine 20/E (Vol. 1 & vol. 2) (ebook) 20 th edition / Dennis L. Kasper, Anthony S.Fauci, Stephen L.Hauser, Dan L.Longo, J.Larry Jameson, Joseph Loscalzo. – McGraw Hill Professional, 2018. – 4048 p, 3528 p.
3. The Merck Manual of Diagnosis and Therapy / Edited by Robert S. Porter., 20th Revised edition London : Elsevier Health Sciences, 2018. – 3500 p.
4. Internal Medicine: in 2 books. Book 1. Diseases of the Cardiovascular and Respiratory Systems: textbook / N.M. Seredyuk, I.P. Vakaliuk, R.I. Yatsyshyn et al. – 2019. – 664 p.
5. Internal Medicine: in 2 books. Book 2. Diseases of the Digestive System, Kidney, Rheumatic and Hematological Diseases/ N.M.Seredyuk,I.P.Vakaliuk, R.I.Yatsyshyn et al. – 2020. – 464 p.
6. Cardiology in a Heartbeat / Amar Vaswani, Hwan Juet Khaw et al., Second edition. – Scion Publishing limited, 2022. – 305 p.
7. Cardiology: A Practical Handbook / David Laflamme. CRC Press; 1st edition. - 2016. – 398 p.
8. Brady W.J., Lipinski M.J. et al. Electrocardiogram in Clinical Medicine 1st edition, USA: Wiley Blackwell, 2020. – 473 p.
9. David G. Strauss, Douglas D. Schocken. Marriott’s Practical Electrocardiography 13th edition. USA: Philadelphia – Wolters Kluwer, 2021. – 640 p.
10. Hampton J., Adlam D. The ECG Made Practical 7th edition. UK: Elsevier, 2019. – 341 p.
11. Rheumatology, 2-Volume Set, 8th Edition / Marc C. Hochberg & Ellen M Gravallese et al. – 2022. – 2128 p.
12. Kelley and Firestein's Textbook of Rheumatology, 2-Volume Set 10th Edition / Gary S. Firestein, Ralph C. Budd et al. – 2016.–2288 p.
13. Introduction to Glomerular Disease. In: Feehally J, Floege Jürgen, Tonelli M, Johnson RJ. Comprehensive clinical nephrology. Edinburgh: Elsevier, 2019.– 184 p.
14. Cardiology essentials (manual for students) / T.M. Ternushchak, M.I. Tovt-Korshynska // Uzhhorod: UzhNU, 2019. – 134 p.
15. ECG in medical practice. Manual for students / T.M. Ternushchak, M.I. Tovt-Korshynska // Uzhhorod: UzhNU, 2021. – 42 p.

16. Внутрішні хвороби. Підручник заснований на принципах доказової медицини 2018/19. Видавництво Практична Медицина, Краків, Польща – 1632с.
17. Рішко М.В., Чендей Т.В., Куцин О.О., Когутич І.І. Некоронарогенні захворювання серця. Навчальний посібник для студентів старших курсів. Ужгород: Поліграфцентр «Ліра», 2022. – 75 с.
18. Рішко М. В., Прилипко Л. Б., Кедик А. В. Навчальний посібник для студентів старших курсів та лікарів загальної практики-сімейної медицини, лікарів-терапевтів, лікарів-ревматологів «Менеджмент пацієнтів із ревматичними захворюваннями». Ужгород: Поліграфцентр «Ліра», 2022. – 71 с.
19. Рішко М.В., Кедик А.В., Куцин О.О., Прилипко Л.Б. Імунобіологічні препарати у лікуванні ревматичних захворювань. Методичні рекомендації для студентів старших курсів, лікарів-інтернів та практикуючих лікарів під редакцією Рішка М.В. 2022. – 29 с.
20. Рішко М.В., Кедик А.В., Куцин О.О., Прилипко Л.Б. Нестероїдні протизапальні препарати у лікуванні ревматичних захворювань. Методичні рекомендації для студентів старших курсів, лікарів-інтернів та практикуючих лікарів під редакцією Рішка М.В. 2022. – 31 с.
21. Рішко М.В., Кедик А.В., Куцин О.О., Прилипко Л.Б. Застосування глюкокортикоїдів при ревматичних захворюваннях. Методичні рекомендації для студентів старших курсів, лікарів-інтернів та практикуючих лікарів під редакцією Рішка М.В. 2022. – 47 с.
22. Рішко М.В., Прилипко Л.Б., Кедик А.В., Прилипко Я.В. Діагностичні критерії ревматичних захворювань. Методичні рекомендації для студентів старших курсів, лікарів загальної практики-сімейної медицини, лікарів-терапевтів, лікарів-ревматологів під редакцією Рішка М.В. 2022. – 39 с.
23. Рішко М,В,, Лазур Я.В., Александрова М.Я.Методичні рекомендації для самостійної підготовки студентів «Гостра ревматична лихоманка. Хронічні ревматичні захворювання серця і суглобів» для студентів V курсу спеціальності «Лікувальна справа» з навчальної дисципліни «Внутрішня медицина» Ужгород: ДВНЗ «УжНУ», Говерла, 2018. – 45 с.
24. Практичні аспекти сучасної кардіології: навч. посіб. / В. А. Скибчик, Т. М. Соломенчук. – 3-тє вид., доп. і випр. – Львів : Бона, 2022. – 539 с.
25. Електрокардіографічна діагностика і лікування в невідкладній кардіології : навч. посіб. / В. А. Скибчик, Я. В. Скибчик. – Львів : ЗУКЦ, 2023. – 154 с.
26. Браунволд Д.Л., Зіпс Д.П., Ліббі П. [та ін.]. Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine / Д.Л. Браунволд, Д.П. Зіпс, П. Ліббі та ін.; за ред. Д.Л. Браунволда. –11-те вид. – Філадельфія: Elsevier, 2021. – 1812 с.
27. Камм А.Й., Люшер Т., Серруйс П.В. [та ін.]. Oxford Textbook of Cardiovascular Medicine / А.Й. Камм, Т. Люшер, П.В. Серруйс та ін.; за ред. А.Й. Камма. – 3-є вид. – Оксфорд: Oxford University Press, 2017. –1280 с.
28. Гріффін Б.П., Сілка М.Й. Manual of Cardiovascular Medicine / Б.П. Гріффін, М.Й. Сілка. – 6-те вид. –Філадельфія: Wolters Kluwer, 2021. – 1000 с.
29. Кроуфорд М.Х., МакГілл К.М.Л. Cardiovascular Medicine / М.Х. Кроуфорд, К.М.Л. МакГілл. – 3-тє вид. – Нью-Йорк: McGraw-Hill Education, 2020. – 1200 с.
30. Brenner B.M., Rector F.C., Brenner and Rector's The Kidney / B.M. Brenner, F.C. Rector. – 11th ed. – Philadelphia: Elsevier, 2020. –2400 p.
31. Шевченко Л.П., Основи нефрології / Л.П. Шевченко. – 2-ге вид. – Харків: ХНМУ, 2018. – 448 с.

Information Resources for Module 4

32. Occupational Diseases: textbook (III—IV a. l.) / V.A. Kapustnik, I.F. Kostyuk, H.O. Bondarenko et al.; edited by V.A. Kapustnik, I.F. Kostyuk. – 2nd: Medicina, 2018. – 496 p.
33. The textbook of occupational medicine practice: edited by D. Koh, Tar Ching Aw, 4 th: World Scientific, 2017. – 956p.
34. Загальні поняття професійних захворювань: метод. реком. / М. В. Рішко, Л. Б. Прилипко, Н. В. Вантюх, А. В. Кедик. – Ужгород: ДВНЗ «УжНУ». – 2023. 46 с. https://dspace.uzhnu.edu.ua/jspui/handle/lib/54801
35. Капустник В. А. Професійні хвороби: Підручник. – 2-ге вид., перероб. і доп. / Капустник В.А., Костюк І.Ф. К.: ВСВ “Медицина”, 2017. – 535 с.

36. Методичні рекомендації із самостійної підготовки до практичного заняття «Пневмоконіози. Силікоз. Силікатози. Карбоконіози. Металоконіози. Гіперчутливі пневмоніти» для студентів V курсу спеціальності 222 «Медицина» з навчальної дисципліни «Внутрішня медицина» (курс «Професійні хвороби») / Уклад: М.В. Рішко, Н.В. Вантюх, Л.Б. Прилипко, Я.В. Лазур. Ужгород: ДВНЗ «УжНУ», 2023. – 67с. https://dspace.uzhnu.edu.ua/jspui/handle/lib/54800
37. Хухліна О. С. Професійні хвороби: навч. посіб. для студ. ВМНЗ III-IV р. а. / О. С. Хухліна, Г. І. Шумко, О. Є. Мандрик ; М-во охорони здоров'я України, ВДНЗ України "Буковин. держ. мед. ун-т". - [Вид. 2- е, доп.]. - Чернівці : [б. и.], 2017. –189 с.
38. Суярко В.В., Литвиненко В.А., Охорона праці і професійні захворювання / В.В. Суярко, В.А. Литвиненко. 2-ге вид. Харків: Основа, 2019. – 320 с.

Information Resources for Module 5

39. Oxford Handbook of Clinical Immunology and Allergy / Gavin P Spickett. – 4th ed.– Oxford University Press, 2019. – 704 p.
40. Anis Kuby, Kuby Immunology / J. Kuby. – 8th ed. – New York: W.H. Freeman and Company, 2019. – 624 p.
41. Abul K. Abbas, Andrew H. Lichtman, Shiv Pillai, Cellular and Molecular Immunology / A.K. Abbas, A.H. Lichtman, S. Pillai. – 9th ed. – Philadelphia: Elsevier, 2021. – 496 p.
42. Richard Coico, Geoffrey Sunshine, Immunology: A Short Course / R. Coico, G. Sunshine. – 7th ed. – New York: Wiley, 2019. – 448 p.
43. Clinical Immunology and Allergology basics. Manual for students / M.V. Rostoka-Reznikova, M.I. Tovt-Korshynska // Ужгород: Інформаційний Центр ЦМКЛ, 2019. – 37 p.
44. Клінічна імунологія та алергологія : підручник / В.В. Чоп'як, А.М. Гаврилюк, С.О. Зубченко та ін.; ВСВ «Медицина», 2025. – 479 с.
45. Клінічна імунологія та алергологія: навчальний посібник (ВНЗ III—IV р. а.) /В.В. Чоп'як, С. О. Потьомкіна, А. М. Гаврилюк та ін., «Медицина», 2017. – 224 с.
46. Бабаджан В.Д., Кузнєцова Л.В., Кравчун П.Г., Курченко А.І. Клінічна та лабораторна імунологія. Підр. у 2-х томах. Видання 2-е, перероблене. Х: Медпринт, 2022. – 1352 с.
47. Основи імунології: функції та розлади імунної системи : посібник : пер. 6-го англ. вид. / Абул К. Аббас, Ендрю Г. Ліхтман, Шив Піллай ; наук. ред. пер. Валентина Чоп'як. - Київ: ВСВ Медицина, 2020. – 328 с.
48. Рішко М.В., Вантюх Н.В., Лемко О.І., Лазур Я.В. Методичні рекомендації із самостійної підготовки до практичного заняття «Теоретичні основи клінічної імунології: фактори неспецифічної резистентності та набутого імунітету» навчальної дисципліни «Клінічна імунологія» для студентів V курсу спеціальності «Лікувальна справа» з навчальної дисципліни «Клінічна імунологія». Ужгород: «Говерла», 2021. – 64с. https://dspace.uzhnu.edu.ua/jspui/handle/lib/54802

Information Resources for Module 6

49. Bertram G. Katzung, Basic and Clinical Pharmacology / B.G. Katzung. –15th ed. New York: McGraw-Hill Education, 2021. – 1024 p.
50. Laurence L. The Pharmacological Basis of Therapeutics / L.L. Brunton, R. Hilal-Dandan, B.C. Knollmann. –13th ed. – New York: McGraw-Hill Education, 2017. – 1520 p.
51. Peter N. Bennett. Clinical Pharmacology / P.N. Bennett, M.J. Brown. – 11th ed. –Edinburgh: Churchill Livingstone, 2018. – 784 p.
52. Carol T. O'Neil, Applied Therapeutics: The Clinical Use of Drugs / C.T. O'Neil. – 11th ed. – Philadelphia: Wolters Kluwer, 2020. – 2080 p.
53. Капітонов В.І. Клінічна фармакологія / В.І. Капітонов, Н.В. Зоріна. – 2-ге вид. –Київ: Здоров'я, 2018. – 672 с.
54. Ковальчук В.І. Основи клінічної фармакології / В.І. Ковальчук, І.М. Білик. – Харків: ХНМУ, 2020. – 504 с.
55. Шумейко О.І. Клінічна фармакологія та фармакотерапія / О.І. Шумейко, В.І. Мартиненко. – 4-те вид. – Київ: МОРІОН, 2017. – 600 с.
56. Дерев'янко Л.О. Фармакологія і фармакотерапія в практиці лікаря / Л.О. Дерев'янко, В.В. Кутін. – 3-тє вид. – Харків: СпецЛіт, 2016. – 576 с.

57. Клінічна психофармакологія / Напрєєнко О. К., Хайтович М. В. // навчальний посібник для студентів вищих медичних (фармацевтичних) навчальних закладів. – Вінниця, ТОВ «Нілан-ЛТД», 2016. – 174 с.
58. Клінічна фармакологія: Підручник для студентів вищ. навч. закл. у 2-х томах / За ред. І.А.Зупанця, С.В.Нальотова, О.П.Вікторова. – Харків: Вид-во НФАУ: Золоті сторінки, 2007. – Т.1. – 348 с., Т.2. – 312 с.

Additional references

Information resources on the Internet

59. Medscape education (https://www.medscape.org/)
60. The New England Journal of Medicine: Research & Review (https://www.nejm.org/)
61. The BMJ: Leading Medical Research, News, Education, Opinion (https://www.bmj.com/)
62. Uzhhorod National University Lecturio (https://uzhnu.lecturio.com/)
63. Occupational Medicine | Oxford Academic (http://occmed.oxfordjournals.org/)
64. Allergy, Asthma & Clinical Immunology (http://www.aacijournal.com/)
65. Clinical Immunology | Journal | ScienceDirect.com by Elsevier (http://www.journals.elsevier.com/clinical-immunology/)
66. European Journal of Immunology - Wiley Online Library (http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1521-4141)
67. Review journal http://www.current-opinion.com/journals/current-opinion-in-immunology/
68. Immunology - Wiley Online Library (http://www.current-opinion.com/journals/current-opinion-in-immunology/)
69. KDIGOGuidelines http://kdigo.org/home

Appendix

Results of the further review of the syllabus

The syllabus was re-approved on 20___ / 20___ academic year unchanged; with changes (Appendix___).

(underline the correct variant)

Minutes № ____ of "____" _____ 20 ___ Head of the Department _____ _____

(Signature) (Surname, initials)

The syllabus was re-approved on 20___ / 20___ academic year unchanged; with changes (Appendix ___).

(underline the correct variant)

Minutes № ____ of "____" _____ 20 __ Head of the Department _____ _____

(Signature) (Surname, initials)

The syllabus was re-approved on 20___ / 20___ academic year unchanged; with changes (Appendix ___).

(underline the correct variant)

Minutes № ____ of "____" _____ 20 ___ Head of the Department _____ _____

(Signature) (Surname, initials)

The syllabus was re-approved on 20___ / 20___ academic year unchanged; with changes (Appendix___).

(underline the correct variant)

Minutes № ____ of "____" _____ 20 ___ Head of the Department _____ _____

(Signature) (Surname, initials)