

Taras Shevchenko National University of Kyiv
Educational and Scientific Centre
«Institute of Biology and Medicine»

Department of Fundamental Medicine



"APPROVED"

Deputy director for
scientific and pedagogical work
Olha KHARCHENKO
«20» 06 2023 year

WORKING PROGRAM OF EDUCATIONAL DISCIPLINE

Pathomorphology

for students

branch of knowledge 22 «Healthcare»
specialty 222 «Medicine»
educational level «Master»
educational program «Medicine»
type of discipline compulsory

Form of study	<u>full-time</u>
Academic year	<u>2023/2024</u>
Semester	<u>5,6</u>
The number of ECTS credits	<u>7</u>
Language of teaching and knowledge assessment	<u>English</u>
Form of final examination	<u>5 semester – exam</u> <u>6 semester – exam</u>

Teachers: head of the department of fundamental medicine, M.D., professor Khoperiia V.G.,
assistant of the department of fundamental medicine, Ph. D. in Medicine Mostiuk O.M.

Prolonged for 20__/20__ a.y. _____ (_____) «__» 20__ y
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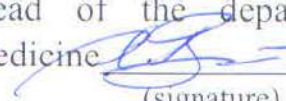
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KYIV- 2023

Developers: Khoperiia V.G. M.D., professor, head of the department of fundamental medicine

Mostiuk O.M Ph. D. in Medicine, assistant of the department of fundamental medicine

APPROVED

Head of the department of fundamental medicine  (Viktoriia KHOPERIIA)
(signature)

Protocol № 12 from «12» 06 2023 y.

Approved by the scientific and methodological commission

ESC «Institute of biology and medicine»

Protocol № 6 from «20» 06 2023

Head of the scientific and methodological commission

 (Nataliia SKRYPNYK)

«20» 06 2023 year

1. The goal of the discipline is to study microscopic and ultramicroscopic structure of organs and tissues of the human body, their development and changes in different conditions of vital activity.

2. Preliminary knowledge requirements:

1. Successful mastering of such disciplines as "Human anatomy", «Physiology», «Histology, cytology and embryology», «microbiology, virology and immunology», «biological and bioorganic chemistry», «medical biology», «medical and biological physics».
2. Ability to put knowledge of the above-mentioned disciplines (human anatomy, histology, biochemistry etc.) into practice independently to resolve particular scientific and practical tasks. Skills in working with scientific and methodical literature.
3. Basic systematic analytical skills.

3. Course summary:

The course "Pathomorphology" is a part of the cycle of specialists' training of educational level "Master's degree" in the educational program "Medicine". Pathomorphology is a compulsory discipline that gives the concept of the structural basis of human diseases for the in-depth mastering of the fundamental basics of medicine and the clinical picture of diseases, with further use of the acquired knowledge in doctor's practice.

The study of the structural basis of human diseases consists of two sections: general and clinical pathomorphology (special pathomorphology).

General pathomorphology establishes an understanding of the structural bases of cellular-organ's pathology – typical general pathological processes, the set of which determines the morphofunctional manifestations of certain diseases.

Special (clinical) pathomorphology gives knowledge of the structural bases of the development of human diseases and their clinical manifestations, recovery, complications and consequences; knowledge of diseases' modifications, that develop due to changes in human and environmental conditions (*pathomorphosis*); knowledge of diseases arising due to various medical measures - prophylactic, diagnostic, therapeutic, cosmetic, anesthesiological, resuscitatorial (pathology of therapy, resuscitation pathology, iatrogeny).

4. Tasks (educational goals):

1. To study typical general pathological processes, the set of which determines the morphological manifestations of diseases;
2. To study structural bases of disease development, their clinical manifestations, structural bases of recovery, complications and consequences;
3. To study methods of pathomorphological research: autopsy, biopsy, examination of biopsy material;
4. To study features of morphological changes of tissues at various pathological processes;
5. To study modern histological classification systems, as well as the classification of tumors by the TNM system;
6. To study modern methods of tumor diagnosis;
7. To study features of norms and rules of professional ethics, deontology, confidentiality in work of pathomorphological laboratory.

According to the standard of higher education of Ukraine (second (master's degree) level of higher education (National Qualifications Framework of Ukraine – 7), field of knowledge 22 "Healthcare", specialty 222 "Medicine"), the discipline ensures the acquisition of the following competences by students:

Integral:

Ability to solve complex problems, including research and innovation in the field medicine.
Ability to continue learning with a high degree of autonomy.

General:

- GC 4. Knowledge and understanding of the subject area and understanding of professional activity;
GC 5. The ability to adapt and act in a new situation;
GC 9. Ability to communicate in English;
GC 12. Ability to act on the basis of ethical considerations;
GC 14. The ability to realize their rights and responsibilities as a member of society, to realize the values of civil (free democratic) society and the need for its sustainable development, the rule of law, the rights and freedoms of man and citizen;
GC 15. Ability to preserve and multiply moral, cultural, scientific values and achievements of society on the basis of understanding of history and patterns of development of the subject area, its place in the general system of knowledge about nature and society and in the development of society, technology and technology, to use different types and forms of motor activity for active rest and healthy living.

Special (occupational):

- SC 17. Ability to assess the impact of the environment, socio-economic and biological determinants on the health of the individual, family, population;
SC 18. Ability to analyze the activities of a doctor, department, health care institution, ensure the quality of medical care and improve the efficiency of medical resources;
SC 19. Ability to organize and integrate medical care and marketing of medical services;
SC 20. Ability to conduct epidemiological and medical-statistical studies of public health, processing of social, economic and medical information;
SC 22. Ability to manage health workflows that are complex, unpredictable and require new strategic approaches;
SC 23. Ability to develop and implement scientific and applied projects in the field of health care;
SC 25. Adherence to professional and academic integrity, be responsible for the accuracy of scientific results.

Learning outcomes of the discipline:

5 semester

Results of studying (1. to know; 2. to be able to; 3. communication; 4. autonomy and responsibility)		Forms (and / or methods and technologies) of teaching and learning	Methods of evaluation	Percentage in the final evaluation of the discipline
Code	Learning outcomes			
1	To know			
1.1.	About the structural basis of diseases	lectures, practical lessons, independent work	Module control works 1 and 2; final control work; assessment of oral answers and additions; presentations/reports; knowledge of histological specimen; registration of results of microscopic analysis of histological specimen, exam	10

1.2.	Typical pathological processes	lectures, practical lessons, independent work	Module control works 1 and 2; final control work; assessment of oral answers and additions; presentations/reports; knowledge of histological specimen; registration of results of microscopic analysis of histological specimen, exam	10
1.3.	Standard methods of autopsy and intravital diagnosis of diseases	lectures, practical lessons	Module control works 1 and 2; final control work; assessment of oral answers and additions; presentations/reports; knowledge of histological specimen; registration of results of microscopic analysis of histological specimen, exam	10
1.4.	Methods of analysis, synthesis and further modern studying	lectures, practical lessons	Module control works 1 and 2; final control work; assessment of oral answers and additions; presentations/reports; knowledge of histological specimen; registration of results of microscopic analysis of histological specimen, exam	10
1.5.	Structure of professional activity	lectures, independent work	Assessment of oral answers and additions; presentations/reports; exam	10
1.6.	Standard techniques, including modern computer information technology, government, social and medical information processing	lectures, independent work	Assessment of oral answers and additions; presentations/reports	10
2	To be able to			
2.1.	To analyze the structural basis of human diseases for in-depth assimilation of fundamental basics of medicine and clinical picture of diseases with further use of obtained knowledge in practical doctor's work.	lectures, practical lessons	Module control works 1 and 2; final control work; assessment of oral answers and additions; presentations/reports; knowledge of histological specimen; registration of results of microscopic analysis of histological specimen, exam	10
2.2.	Assess the information on the results of autopsy and methods of intravital diagnosis of diseases	lectures, practical lessons	Module control works 1 and 2; final control work; assessment of oral answers and additions; presentations/reports; knowledge of histological specimen; registration of results of microscopic analysis of histological specimen, exam	10
2.3.	Solve complex tasks and problems that arise in professional activities	practical lessons, independent work	Module control works 1 and 2; final control work; assessment of oral answers and additions; presentations/reports; knowledge of histological specimen; registration of results of microscopic analysis of histological specimen, exam	10
3	Communication			
3.1.	To assess information on a diagnosis in the form of reports using modern technologies, to correctly conduct the discussion.	practical lessons	Assessment of oral answers and additions; presentations/reports	5
4	Autonomy and responsibility			
4.1.	To navigate the basic issues of pathomorphology, to select and analyze contemporary literature in this field, to use it, as well as data	practical lessons, independent work	Assessment of oral answers and additions; presentations/reports; exam	5

	processing programs to plan, obtain and analyze the results of their own research work.			
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6 семестр

Results of studying (1. to know; 2. to be able to; 3. communication; 4. autonomy and responsibility)		Forms (and / or methods and technologies) of teaching and learning)	Methods of evaluation	Percentage in the final evaluation of the discipline
Cod e	Learning outcomes			
1	To know			
1.1.	About the structural basis of diseases	lectures, practical lessons, independent work	Module control works 1 and 2; final control work; assessment of oral answers and additions; presentations/reports; knowledge of histological specimen; registration of results of microscopic analysis of histological specimen, exam	15
1.2.	Typical pathological processes	lectures, practical lessons, independent work	Module control works 1 and 2; final control work; assessment of oral answers and additions; presentations/reports; knowledge of histological specimen; registration of results of microscopic analysis of histological specimen, exam	10
1.3.	Standard methods of autopsy and intravital diagnosis of diseases	lectures, practical lessons	Module control works 1 and 2; final control work; assessment of oral answers and additions; presentations/reports; knowledge of histological specimen; registration of results of microscopic analysis of histological specimen, exam	10
1.4.	Structure, standard methods of diagnostics and analysis of diseases of organs and systems	lectures, practical lessons	Module control works 1 and 2; final control work; assessment of oral answers and additions; presentations/reports; knowledge of histological specimen; registration of results of microscopic analysis of histological specimen, exam	10
1.5.	Methods of analysis, synthesis and further modern studying	lectures, practical lessons	Module control works 1 and 2; final control work; assessment of oral answers and additions; presentations/reports; exam	5
1.6.	Structure of professional activity	lectures, independent work	Assessment of oral answers and additions; presentations/reports; exam	5
1.7.	Standard techniques, including modern computer information technology, government, social and medical information processing	lectures, independent work	Assessment of oral answers and additions; presentations/reports	5
2	To be able to			
2.1.	analyze the structural basis of human diseases for in-depth assimilation of fundamental basics of medicine and clinical picture of diseases with further use of obtained knowledge in practical doctor's work	lectures, practical lessons	Module control works 1 and 2; final control work; assessment of oral answers and additions; presentations/reports; knowledge of histological specimen; registration of results of microscopic analysis of histological specimen, exam	10
2.2.	Assess the information on the results of autopsy	lectures, practical	Module control works 1 and 2; final control work; assessment of oral	10

		lessons	answers and additions; presentations/reports; knowledge of histological specimen; registration of results of microscopic analysis of histological specimen, exam	
2.3.	Solve complex tasks and problems that arise in professional activities	practical lessons, independent work	Module control works 1 and 2; final control work; assessment of oral answers and additions; presentations/reports; knowledge of histological specimen; registration of results of microscopic analysis of histological specimen, exam	10
3	Communication			
3.1.	To assess information on a diagnosis in the form of reports using modern technologies, to correctly conduct the discussion	practical lessons	Assessment of presentation / report, oral answers and additions	5
4	Autonomy and responsibility			
4.1.	To navigate the basic issues of pathomorphology, to select and analyze contemporary literature in this field, to use it, as well as data processing programs to plan, obtain and analyze the results of their own research work.	practical lessons, independent work	Assessment of presentation / report, oral answers and additions; exam	5

5. The ratio of learning outcomes of the discipline with syllabus learning outcomes

5 semester

Learning discipline results (code) Program Learning Results (title)	1.1	1.2	1.3	1.4	1.5	1.6	2.1	2.2	2.3	3.1	4.1
PLO 20. To analyze the epidemiological situation and carry out measures of mass and individual, general and local prevention of infectious diseases.	+	+	+	+	+		+				
PLO 21. To search for the necessary information in the professional literature and databases of other sources, analyze, evaluate and apply this information.	+	+	+	+	+		+				
PLO 22. To apply modern digital technologies, specialized software, statistical methods of data analyses to solve complex health problems.	+	+	+	+	+	+	+	+	+	+	+
PLO 25. To clearly and unambiguously communicate one's knowledge, conclusions and arguments on health issues and related issues to specialists and non-specialists.	+	+	+	+	+	+	+	+	+	+	+

6 semester

Learning discipline results (code)												
	1.1	1.2	1.3	1.4	1.5	1.6	1.7	2.1	2.2	2.3	3.1	4.1
Program Learning Results (title)												
PLO 20. To analyze the epidemiological situation and carry out measures of mass and individual, general and local prevention of infectious diseases..	+	+	+	+	+			+				
PLO 21. To search for the necessary information in the professional literature and databases of other sources, analyze, evaluate and apply this information.	+	+	+	+	+			+				
PLO 22. To apply modern digital technologies, specialized software, statistical methods of data analyses to solve complex health problems.	+	+	+	+	+	+	+	+	+	+	+	+
PLO 25. To clearly and unambiguously communicate one's knowledge, conclusions and arguments on health issues and related issues to specialists and non-specialists.	+	+	+	+	+	+	+	+	+	+	+	+

6. Scheme of estimation formation.

5 semester

7.1. Forms of examination:

- semester assessment:

1. Module control work 1 – LO 1.1 - 1.4, 2.1 - 2.3 (block topics for Section 2) – 10 points/5 points
2. Module control work 2 – LO 1.1 - 1.4, 2.1 - 2.3 (block topics for Section 2) – 10 points/5 points
3. Final module control work – LO 1.1 - 1.4, 2.1 - 2.3 (block topics for Section 2) – 10 points/5 points
4. Presentations / reports – LO 1.1-1.6, 2.1 - 2.3, 3.1, 4.1 – 5 points/2,5 points
5. Registration of results of microscopic analysis of histological specimen - LO 1.1-1.4, 2.1 – 2.3 – 10 points / 5 points
6. Knowledge of histological specimen- LO 1.1 - 1.4, 2.1 – 2.3 – 5 points/2,5 points
7. Oral answers /additions - LO 1.1 - 1.6, 2.1 - 2.3, 3.1, 4.1 – 10 points/5 points

- final evaluation: in the form of an exam

The total score from the educational component as a whole, the final form of examination for which the exam is established, is defined as the sum of marks (points) for all successfully evaluated learning outcomes during the semester (grades below the minimum threshold are not added to the final score) and the score obtained during exam. Scores below the minimum threshold are not added to the final score.

The form of the exam is test control work. The results of the training which are evaluated during the exam are LO 1.1 – 1.5, 2.1 - 2.3, 4.1. The maximum number of points that can be obtained by an examiner during the exam is 40 points per 100 ball scale. It is not allowed to complete the semester control in order to improve the positive assessment.

- admission conditions for the final exam:

Mandatory admission to the exam is the completion of all practical work, (writing module control works, registration of results of microscopic analysis of histological specimen, writing final module control work). An apprentice is not allowed to take an exam if he has scored less than 20 points during the semester.

7.2. Organization of examination:

Module control works 1, 2 and the final module control work are carried out upon completion of the thematic lectures in Section 2, evaluation of the registration of the results of microscopic analysis of histological specimen - during the conduct of thematic practical lessons of Section 2, determination of the level of knowledge of the histological specimen -upon completion of lectures and practical lessons of Section 2.

Assessment of presentations / reports, oral answers and additions is made during lectures and the practical classes.

7.3. Scale of Grade

Відмінно / Excellent	90-100
Добре / Good	75-89
Задовільно / Satisfactory	60-74
Незадовільно / Fail	0-59

6 semester

7.1. Forms of examination:

- semester assessment:

1. Module control work 1 – LO 1.1 - 1.5, 2.1 - 2.3 (block topics for Section 2) – 10 points / 5 points
2. Module control work 2 – LO 1.1 - 1.5, 2.1 - 2.3 (block topics for Section 2) – 10 points / 5 points
3. Final module control work – LO 1.1 - 1.5, 2.1 - 2.3 (block topics for Section 2) – 10 points / 5 points
4. Presentations / reports – LO 1.1-1.7, 2.1 - 2.3, 3.1, 4.1 – 5 points / 2,5 points
5. Registration of results of microscopic analysis of histological specimen - LO 1.1-1.4, 2.1-2.3 – 10 points / 5 points
6. Knowledge of histological specimen- LO 1.1 - 1.4, 2.1 - 2.3 – 5 points /2, 5 points

- final evaluation: in the form of an exam

The total score from the educational component as a whole, the final form of examination for which the exam is established, is defined as the sum of marks (points) for all successfully evaluated learning outcomes during the semester (grades below the minimum threshold are not added to the final score) and the score obtained during exam. Scores below the minimum threshold are not added to the final score.

The form of the exam is test control work. The results of the training which are evaluated during the exam are LO 1.1 – 1.6, 2.1 - 2.3, 4.1. The maximum number of points that can be obtained by an examiner during the exam is 40 points per 100 ball scale. It is not allowed to complete the semester control in order to improve the positive assessment.

- admission conditions for the final exam:

Mandatory admission to the exam is the completion of all practical work, (writing module control works, registration of results of microscopic analysis of histological specimen, writing final module control work). An apprentice is not allowed to take an exam if he has scored less than 20 points during the semester.

6.2 Organization of examination:

Module control works 1, 2 and the final module control work are carried out upon completion of the thematic lectures in Section 2, evaluation of the registration of the results of microscopic analysis of histological specimen - during the conduct of thematic practical lessons of Section 2, determination of the level of knowledge of the histological specimen - upon completion of lectures and practical lessons of Section 2.

Assessment of presentations / reports, oral answers and additions is made during lectures and the practical classes.

7.3 Scale of Grade

Відмінно / Excellent	90-100
Добре / Good	75-89
Задовільно / Satisfactory	60-74
Незадовільно / Fail	0-59

8. Structure of the discipline. Thematic plan *

5 semester

№ п/ п	Names of topics	Number of hours			
		Lectures	Practical training	Consultations	Independent work*
1	Section 1. General pathomorphology	16	46	2	56
2	Topic 1. The subject and tasks of pathomorphology. Fundamentals of tonatology (birth and death of a person, periods of tonatogenesis, signs of clinical death, causes and early signs of biological death, cadaveric changes). The main stages of development of pathological anatomy. Methods of pathoanatomical diagnosis. Cellular dystrophies: hyaline-droplet, hydropic, keratinizing, fat. Pathomorphology of complex protein (hyalinosis) and lipid accumulation.	2			
3	Practical class. Introduction to pathomorphology. The subject and tasks of pathomorphology. The main stages of development of pathomorphology. Methods of pathoanatomical diagnosis. Methods of pathomorphological research.		3		
4	Practical class. Morphological changes of cells in response to stress and toxic damage (parenchymatous / cellular dystrophies) Cellular dystrophies: hyaline-droplet, hydropic, fatty.		3		
5	Practical class. Morphological changes of the extracellular matrix (stroma) in response to damage (stromal-vascular dystrophy). Pathomorphology of complex protein (hyalinosis) and lipid accumulation. Exhaustion of the body.		3		
6	Independent work. Cell-matrix interactions. Cellular and extracellular mechanisms of trophic regulation.				4
7	Topic 2. Pathomorphology of cumulation of products of impaired metabolism. Disorders of iron metabolism and metabolism of hemoglobinogenic pigments, Pathomorphological manifestations of disorders of melanin formation, exchange of nucleoproteins and copper. Calcification of tissues. Formation of stones in organs.	2	3		
8	Topic 3. Necrosis. Clinico-morphological forms of necrosis. Selective death of specialized cells: pathogen-induced apoptosis, selective cell death induced by the immune system and cell destruction by activated complement.	2	3		
9	Independent work. Pathomorphological manifestations of impaired melanin formation, exchange of nucleoproteins and copper. Calcification of tissues. Formation of stones in organs.				4
10	Topic 4. Acute circulatory systemic disorders (acute coronary insufficiency, shock) and circulatory systemic disorders in chronic heart failure and their consequences. Regional circulatory disorders (hyperemia, ischemia, bleeding and hemorrhage). Lymphoid creation and preservation disorders. Thrombosis. Embolism.	2			

11	Practical class. Acute systemic disorders of blood flow (acute coronary insufficiency, shock) and systemic blood circulation disorders in chronic heart failure and their consequences. Regional circulatory disorders (hyperemia, ischemia, plasma, bleeding and hemorrhages). Disorders of creation and central lymph.		3		
12	Independent work. Regional circulatory disorders (hyperemia, ischemia, plasmorrhagia, bleeding and hemorrhage). Disorders of formation and circulation of lymph.				4
13	Practical class. Hemostasis disorders: hemorrhagic syndrome, thrombosis, DIC. Embolism. Pulmonary embolism, tonatogenesis.		3		
14	Independent work. Basics of tonatology. Violation of ion-osmotic and water balance, acid-base state.				5
15	Topic 5. Inflammation: causes, morphogenesis. Pathomorphology of exudative inflammation. Proliferative (productive) inflammation: with the formation of sharpened warts, around parasites, interstitial, granulomatous inflammation. Specific proliferative inflammation.	2			
16	Practice class. Inflammation: causes, morphogenesis. Pathomorphology of exudative inflammation.		3		
17	Practical class. Proliferative (productive) inflammation: with the formation of sharpened warts, around parasites, intermediate productive inflammation, granulomatous inflammation. Specific proliferative inflammation.		3		
18	Independent work. Proliferative (productive) inflammation: with the formation of sharpened warts, around parasites, interstitial, granulomatous inflammation.				5
19	Module control work 1		2		
20	Independent work. Molecular-pathomorphological basis of the immune response.				4
21	Topic 6. Regeneration and repairation. Dysregeneration. Structural bases of physiological adaptation of organs and cells. Morphology of cell accommodation processes.	2	3		
22	Independent work. Morphology of compensatory and adaptive changes of organs.				5
23	Topic 7. Oncogenesis. Anatomic-microscopic features and types of growth of benign and malignant tumors. Benign and malignant non-epithelial (mesenchymal) tumors. Sarcoma: features of development and metastasis. Tumors of fibroblastic, myofibroblastic and fibrohistiocytic genesis. Tumors from fat and muscle tissue, tumors from blood vessels.	2			
24	Independent work. Morphological characteristics of the main stages of the development of malignant tumors.				5
25	Topic 8. Clinical and morphological nomenclature of tumors. Epithelial tumors: benign epithelial tumors, cancer (features of development and metastasis, basic histological forms). Melanocytic tumors.	1			
26	Practical class. Oncogenesis. Anatomic-microscopic features and types of growth of benign and malignant tumors. Morphological characteristics of the main stages of the development of malignant tumors. Epithelial tumors: benign organ-specific		3		

	epithelial tumors, cancer (features of development and metastasis, basic histological forms).				
27	Independent work. Clinical and morphological nomenclature of tumors.				4
28	Practical class. Benign and malignant non-epithelial (mesenchymal) tumors. Sarcoma: features of development and metastasis. Tumors of fibroblastic, myofibroblastic and fibrohistiocytic genesis. Tumors from fat and muscle tissue, tumors from blood vessels. Melanocytic tumors.		3		
29	Independent work. Features of tumors of childhood. Embryonic tumors. Germinogenic tumors. Teratomes and teratoblastomas. Tumors of "adult type".				5
30	Topic 9. Tumors of hematopoietic and lymphoproliferative tissue.	1	3		
31	Independent work. Additional methods for the diagnostic of lymphoproliferative tissue diseases.				5
32	Topic 10. Anemia. Thrombocytopathy.		3		
33	Independent work. Clinical and morphological characteristics of intravital diagnostic of anemia and thrombocytopenia.				4
34	Module control work 2		2		
35	Final module control work				2
36	TOTAL	16	46	2	56

* If there are changes to the timetable of the learning process, see Appendix 1

A total of 120 hours, including:

Lectures – 16 hours.

Practical classes – 46 hours.

Consultations - 2 hours.

Independent work – 56 hours.

6 semester

№ п/п	Names of topics	Number of hours			
		Lectures	Practical training	Consultations	Independent work*
1	Section 2. Special pathomorphology	14	30	1	45
2	Topic 1. Atherosclerosis. Coronary heart disease. Hypertension and symptomatic hypertension.	2	2		
3	Topic 2. Systemic connective tissue diseases with autoimmunization: rheumatism, systemic lupus erythematosus, rheumatoid arthritis, systemic scleroderma, dermatomyositis, Bechterev's disease. Endocardial and myocardial diseases: cardiomyopathies, endocarditis, myocarditis, acquired heart defects	2	2		
4	Independent work. Systemic vasculitis: nodular periarteritis, Takayasu arteritis, temporal (giant cell) arteritis, Wegener's granulomatosis, obliterative thrombangitis, Kawasaki disease, Purple Shenlein-Genoch disease, Raynaud's disease and syndrome.				4
5	Topic 3. Cerebrovascular disease (CVD): features of cerebral vessels and cerebral circulation, vascular dyscirculatory encephalopathy, cerebral infarction, cerebral hemorrhage, complications and causes of death in CVD. Tumors of the central nervous system (astroglial, oligodendroglial, ependymal, neuronal, meningeal), cranial and paraspinal nerves.		2		
6	Independent work. Diseases of the central nervous system. Post-resuscitation encephalopathy and brain death syndrome. Neurodegenerative (neurodystrophic) and demyelinating diseases. Neuritis (neuropathy).				4
7	Topic 4. Respiratory diseases.	2	2		
8	Independent work. Clinico-morphological characteristics of the diagnostics of acute and chronic respiratory diseases.				4
9	Topic 5. Diseases of the gastrointestinal tract	1			
10	Independent work. Clinico-morphological characteristics of the diagnostics of diseases of the gastrointestinal tract.				4
11	Practical class. Diseases of the esophagus, stomach and intestines.		1		
12	Practical class. Diseases of the liver, biliary system and pancreas		1		
13	Topic 6. Kidney diseases.	1	2		

14	Independent work. Clinico-morphological characteristics of the diagnostics of kidney diseases.				4
15	Theme 7. Pituitary diseases. Diabetes. Thyroid disease. Diseases of the adrenal glands.	1			
16	Practical class. Hypothalamo-pituitary disorders. Adrenal pathology. Thyroid pathology. Pathology of pancreatic endocrine apparatus.		2		
17	Topic 8. Diseases of the male and female genital system. Pathology of pregnancy, postpartum and placenta. Breast disease.	1	1		
18	Independent work. Features of the use of immunological and molecular methods of research in the diagnosis of diseases of the female reproductive system and breast.				4
19	Topic 9. Pre- and perinatal pathology.		1		
20	Independent work. Pathology of change in nutrition related diseases. Radiation disease, hospital illness. Occupational diseases.				4
21	Module control work 1		2		
22	Topic 10. General concepts of human infectious pathology. Classification of infectious diseases. Intestinal infectious diseases.	1			
23	Practical class. Infectious and parasitic diseases. Characteristics of the infectious process. Intestinal infectious diseases		2		
24	Independent work. Diseases, the causative agents of which are protozoa and helminths.				4
25	Topic 11. Viral airborne infections. HIV infection. Rabies. Rickettsioses. Prion infections. Pediatric infections.	1			
26	Practical class. Viral airborne infections. HIV infection and AIDS. Rabies. Rickettsioses. Prion infections.		2		
27	Independent work. Prion infections.				4
28	Practical class. Pediatric infections.		2		
29	Topic 12. Tuberculosis.	1	2		
30	Independent work. Methods for identifying infectious agents.				3
31	Topic 13. Sepsis. Particularly dangerous (convection, quarantine) infections. Syphilis.	1	2		
32	Independent work. Diseases of the musculoskeletal system. Parathyroid osteodystrophy, osteoporosis, Paget's disease, fibrous dysplasia, osteomyelitis, joint disease, muscular dystrophy, myasthenia gravis. Bone and cartilage tumors.				3

33	Module control work 2		2		
34	Final module control work				3
35	TOTAL	14	30	1	45

* If there are changes to the timetable of the learning process, see Appendix 1

A total of 90 hours, including:

Lectures – 14 hours.

Practical classes – 30 hours.

Consultations – 1 hour.

Independent work – 45 hours.

9. Recommended literature:

Compulsory:

1. Патоморфологія: нац. Підруч. / В.Д.Марковський, В.О.Туманський І.В. Сорокіна П20 та ін., за ред. В.Д.Марковського, В.О.Туманського. — К.: ВСВ «Медицина». 2015 — 936с., кольор. вид. ISBN 978-617-505-450-5.
2. Kumar V. Robbins Basic Pathology tenth edition / Kumar V., Abbas A.K., Aster J.C. – Canada: Elsevier Health Sciences, 2017 – 910 p.
3. Fundamentals of General Pathomorphology. A study guide for international students of Medicine. Part 1 / V. Hoperiya, O. Mostiuk – Kyiv. – 2022. – 214 p. (<http://surl.li/knvya>).

Optional:

1. Струков А. І. Патологічна анатомія: підручник : пер. з рос. / А. І. Струков, В. В. Серов. - 4-е вид. - Х.: Факт, 2004. - 864 с.
2. Шлопов В. Г. Патологічна анатомія : підручник / В. Г. Шлопов. - Вінниця : Нова Книга, 2004. - 768 с.
3. Гасюк А.П. Загальна та спеціальна патологічна анатомія (рейтингова система): навч. посіб. / А. П. Гасюк [и др.]. – Полтава: Українська медична стоматологічна академія, 2004. - 309 с.
4. Патологічна анатомія: Підручник / Струков А.І., Серов В.В. / Пер. з рос. 4-го вид., стереотипне. – Х.: Факт, 2004. – 864 с., іл.
5. Патологічна анатомія (загальнопатологічні процеси) / В.М Благодаров, П.І. Червяк, К.О. Галахін, Л.О. Стеченко, В.А Діброва, МБ. Хомінська, М.А Конончук (за ред. В.М Благодарова та П.І. Червяка). – К.: Генеза, 1997.
6. Сорокіна І.В. Pathological anatomy. Патологічна анатомія: Підручник для студентів / І.В. Сорокіна, А.Ф. Яковцова. - Х.: Факт, 2004. - 648 с.: іл.
7. Sorokina I.V. Lectures in Pathological anatomy / I.V. Sorokina, A.F. Yakovtsova. – Kharkiv: Tornado, 2000. – 254 p.

8. Anderson's Pathology // Edited by John M. Kissane. The C.V. Mosby Company. – Toronto Philadelphia, 1990. – 2196 p.
9. Thomas C. Macropathology / Thomas C. – Toronto, Philadelphia: B.C. Decker Inc., 1990. - 355 p.

10. The internet resources:

1. Центр тестування – база ліцензійних тестових завдань «Крок-1»
2. <http://library.med.utah.edu/WebPath/webpath.html>
3. <http://www.webpathology.com/>
4. <https://www.geisingermedicallabs.com/lab/resources.shtml>.