

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

Petro Mohyla Black Sea National University

Medical Institute

Department of Anatomy, Clinical Anatomy and Operative Surgery, Pathomorphology and Forensic Medicine



Course Discription

PATOMORPHOLOGY

field of knowledge 22 «Health care»

in the specialty 222 «Medicine»

Developers

Head of Department

Guarantor of the educational program

Director of the Institute

Chief of NMV

Kharchenko OV

Silenko OO

Cherno VS

Klimenko MO

Grishchenko GV

Shkirchak SI

1. Description of the discipline

Characteristic	Characteristics of the discipline	
Name of discipline	Pathomorphology	
Field of knowledge	22 «Health»	
Спеціальність	222 «Medicine»	
Specialization (if any)		
Educational program	Medicine	
Level of higher education	Master	
Discipline status	Normative	
Curriculum	3rd	
Academic year	2019-2020	
Semester numbers	Full-time	Correspondence form
	5th - 6th	
Total number of ECTS credits / hours	7 credits (3.5 / 3.5) / 210 hours	
Course structure: – - lectures – - practical training – - hours of independent work of students	Full-time	Correspondence form
	40 hours (20/20)	
	70 hours (36/34)	
	100 hours (50/50)	
Percentage of classroom load	52%	
Language of instruction	English	
Form of intermediate control (if any)	Certification for the 5th semester	
Form of final control	Exam - 6th semester	

2.The purpose and objectives of the discipline

The study program of the discipline "Pathomorphology" is made in accordance with the educational-professional program "Medicine" of Petro Mohyla National University [second (master's) level of higher education in the field of knowledge 22 "Health", specialty 222 "Medicine"], the draft Standard, discussed at the XIII All-Ukrainian scientific-practical conference with international participation "Topical issues of quality of medical education" (May 12-13, 2016, Ternopil) and an approximate curriculum for training specialists of the second (master's) level of higher education in the field of knowledge 22 "Health care" I "in higher education institutions of the Ministry of Health of Ukraine in the specialty 222" Medicine "qualification educational" Master of Medicine ", professional qualification" Doctor ", approved on 07/26/2016

Pathomorphology is a discipline that provides the concept of the structural basis of human diseases for in-depth study of the fundamentals of medicine and the clinical picture of diseases with the subsequent use of knowledge in the practice of medicine.

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

General pathomorphology lays the understanding of the structural foundations of cell-organ pathology - typical general pathological processes, the set of which determines the morphofunctional manifestations of certain diseases.

Special (clinical) pathomorphology provides knowledge of the structural basis of human diseases and their clinical manifestations, recovery, complications and consequences; knowledge of changes in diseases that develop in connection with changes in human living conditions and the environment (pathomorphosis); knowledge of diseases arising as a result of various medical measures - preventive, diagnostic, curative, cosmetic, anesthesiological, resuscitation (pathology of therapy, resuscitation pathology, iatrogenic).

Thanatology provides knowledge about the causes, mechanisms and types of death of patients, on which modern advanced intensive care is based.

The basics of knowledge about the organization and purpose of pathological service, lifelong pathomorphological diagnosis, skills of analysis and prevention of diagnostic and therapeutic errors, as well as the issuance of a medical certificate of death provides a special biopsy-sectional course.

The basis of pathomorphology is pathological anatomy.

Pathological anatomy (from the Greek. Pathos - suffering) - the science of the structural basis of disease and pathological processes, which covers structural changes in organelles, cells, intercellular matrix, tissues and organs of the sick person, as well as causes and mechanisms of death. Pathological anatomy is a clinical science and at the same time a branch of practical medicine, it plays a central role in the lifelong and postmortem diagnosis of human diseases. Diagnosis (Greek. Diagnōsis) in medicine - is the recognition, definition of the disease. Pathologists who work in medical institutions and specialized pathology bureaus recognize diseases during the life of patients, as well as after their death.

The subject of study of the discipline is the structural basis of human diseases for in-depth study of the fundamentals of medicine and the clinical picture of diseases with the subsequent use of knowledge in the practical work of the doctor.

Interdisciplinary links: pathomorphology as a discipline is based on students' mastery of human anatomy and physiology, histology, cytology and embryology, genetics, microbiology, virology and immunology, biological chemistry, medical biology and medical physics. Assimilation of pathomorphology is integrated with the study of pathological physiology and clinical disciplines.

2.1. The purpose of teaching the discipline "Pathomorphology" is to study the microscopic and ultramicroscopic structure of the structures of the human body, their development and changes in various living conditions.

2.2. The main tasks of studying the discipline are:

- Study of typical general pathological processes, the combination of which determines the morphological manifestations of diseases.
- To study the structural basis of the development of diseases and their clinical manifestations, the structural basis of recovery, complications and consequences.
- To study methods of pathomorphological researches: autopsy biopsy, research of biopsy material.

2.3. Компетентності та результати навчання, формуванню яких сприяє дисципліна:

- Здатність до оцінювання результатів розтину, досліджень біопсійно-секційного матеріалу.
- Здатність до аналізу морфологічних проявів хвороб.
- Здатність до аналізу структурного підґрунтя розвитку хвороб та їх клінічних проявів, структурних основ одужання, ускладнень та наслідків.
- Здатність до засвоєння методів патоморфологічних досліджень: аутопсія, біопсія.
- Оцінювати інформацію щодо діагнозу в умовах закладу охорони здоров'я, його підрозділу, використовуючи знання про структурне підґрунтя хвороб, на підставі результатів розтину та методів прижиттєвої діагностики хвороб.

2.3. Competences and learning outcomes, the formation of which is facilitated by the discipline:

- Ability to evaluate the results of autopsy, research of biopsy-section material.
- Ability to analyze morphological manifestations of diseases.
- Ability to analyze the structural basis of the development of diseases and their clinical manifestations, the structural basis of recovery, complications and consequences.
- Ability to master the methods of pathomorphological research: autopsy, biopsy.
- Evaluate information about the diagnosis in the health care institution, its unit, using knowledge of the structural basis of the disease, based on the results of the autopsy and methods of lifelong diagnosis of the disease.

According to the requirements of OPP, the discipline provides students with the acquisition of **competencies**:

general (LC) - LC1-LC6 OPP:

ZK 1. Ability to abstract thinking, analysis and synthesis, the ability to learn and master modern knowledge.

ZK2. Ability to apply knowledge in practical situations.

ZK3. Knowledge and understanding of the subject area and understanding of professional activity.

ZK 4. Ability to adapt and act in a new situation.

ZK 5. Ability to make an informed decision; work in a team; interpersonal skills.

ZK 6. Ability to communicate in the state language both orally and in writing; ability to communicate in a foreign language.

professional (special, subject) (FC) - FC18 OPP:

Ability to keep medical records.

According to the OPP, the expected program learning outcomes (PRN) include the skills of PRN4, PRN12 OPP:

- Know the types and methods of adaptation, principles of action in a new situation. To be able to apply means of self-regulation, to be able to adapt to new situations (circumstances) of life and activity. Establish appropriate connections to achieve results. Be responsible for the timely use of self-regulatory methods.
- Evaluate information about the diagnosis in the health care facility, its unit, using a standard procedure, using knowledge about the person, his organs and systems, based on the results of laboratory and instrumental studies (according to list 4).

3. The program of the discipline

210 hours and 7 ECTS credits are allocated for the study of the academic discipline.

Program structured in two semesters:

V semester 1. General pathomorphology.

VI semester 2. Special pathomorphology.

The structure of the discipline

Names of sections of the discipline and topics	Number of hours					
	Form of study (full-time)					
	total	including				
L		P	Lab	Ind.	Indep.	
Discipline section 1. General pathomorphology.						
Topic 1. Introduction to pathomorphology. Subject and tasks of pathomorphology. The main stages of development of pathomorphology. Methods of pathological diagnosis. Methods of pathomorphological research.	6	2	2			2
Topic 2. Morphological changes of cells in response to stress and toxic damage (parenchymal / cellular dystrophies). Cellular dystrophies: hyaline-droplet, hydropic, fatty.	4		2			2
Topic 3. Morphological changes of the extracellular matrix (stroma) in response to damage (stromal-vascular dystrophies). Pathomorphology of accumulation of complex proteins (hyalinosis) and lipids. Exhaustion of the body.	4		2			2
Topic 4. Pathomorphology of accumulation of products of disturbed metabolism. Disorders of iron metabolism and metabolism of hemoglobinogenic pigments, Pathomorphological manifestations of melanin formation, nucleoprotein and copper metabolism. Calcification (calcification) of tissues. Formation of stones in the organs.	6	2	2			2
Topic 5. Necrosis. Clinical and 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. Pathomorphology of organ failure.	6	2	2			2
Topic 6. Acute systemic circulatory disorders (acute coronary insufficiency, shock) and systemic circulatory disorders in chronic heart failure and their consequences. Regional circulatory disorders (hyperemia, ischemia, plasmorrhagia, bleeding and hemorrhage). Disorders of lymph formation and circulation.	6	2	2			2
Topic 7. Hemostasis disorders: hemorrhagic syndrome, thrombosis, DIC syndrome. Embolism. Pulmonary artery thromboembolism, thanatogenesis.	6		2			4
Topic 8. Final lesson. Practical experience.	2		2			
Topic 9. Inflammation: causes, morphogenesis. Pathomorphology of exudative inflammation	8	2	2			4
Topic10. Proliferative (productive) inflammation: with the formation of acute genital warts, around parasitic animals,	8		2			6

intermediate productive inflammation, granulomatous inflammation. Specific proliferative inflammation.						
Topic 11 Molecular pathomorphological basis of the immune response. Immune system in the prenatal and postnatal period. Pathology of immune processes: amyloidosis, hypersensitivity reactions, graft rejection reaction. Immune deficiency. Autoimmune diseases.	8	2	2			4
Topic 12. Regeneration. Structural bases of physiological adaptation of organs and cells. Morphology of cell accommodation processes. Compensatory-adaptive processes.	8	2	2			4
Topic 13. Oncogenesis. Anatomical and microscopic features and types of growth of benign and malignant tumors. Morphological characteristics of the main stages of malignant tumors. Clinical and morphological nomenclature of tumors. Tumors of the epithelium: benign organ-specific epithelial tumors, cancer (features of development and metastasis, the main histological forms).	8	2	2			4
Topic 14. Benign and malignant non-epithelial (mesenchymal) tumors. Sarcoma: features of development and metastasis. Tumors of fibroblastic, myofibroblastic and fibrohistiocytic genesis. Tumors of adipose and muscle tissue, tumors of blood vessels. Melanocyte tumors.	8	2	2			4
Topic.15. Autopsy. Practical skills.	2		2			
Topic 16. Anemia. Thrombocytopathy.	4		2			2
Topic 17. Tumors of hematopoietic and lymphoproliferative tissue.	6	2	2			2
Topic 18. Final lesson. Practical experience.	6		2			4
Разом за розділом 1	106	20	36			50
Section of the discipline - 2. Special pathomorphology.						
Topic 1. Atherosclerosis and arteriosclerosis. Coronary heart disease. Hypertension and arteriosclerosis. Hypertension and symptomatic hypertension.	8	2	2			4
Topic 2. Systemic connective tissue diseases with auto immunization: rheumatism, systemic lupus erythematosus, rheumatoid arthritis, systemic scleroderma, dermatomyositis, ankylosing spondylitis. Endocardial and myocardial diseases: cardiomyopathies, endocarditis, myocarditis, acquired heart defects.	6	2	2			2
Topic 3. Cerebrovascular diseases. Postreanimation encephalopathy and brain death syndrome. Tumors of the central nervous system (astroglial, oligodendroglial, ependymal, neuronal, meningeal), cranial and paraspinal nerves.	6		2			4
Topic 4. Respiratory diseases.	6	2	2			2
Topic 5. Diseases of the esophagus, stomach and intestines.	4		2			2
Topic 6. Diseases of the liver, biliary system and pancreas.	6	2	2			2
Topic 7. Kidney disease.	6	2	2			2
Topic 8. Hypoatalamo-pituitary disorders. Pathology of the adrenal glands. Pathology of the thyroid gland. Pathology	6	2	2			2

of the endocrine system of the pancreas.					
Topic 9. Diseases of the female and male reproductive system. Pathology of pregnancy, postpartum and placenta. Breast disease.	4		2		2
Topic 10. Pre- and perinatal pathology.	4		2		2
Topic 11. Final lesson. Practical experience.	6		2		4
Topic 12. General concepts of human infectious pathology. Classification of infectious diseases. Intestinal infectious diseases.	8	2	2		4
Topic 13. Viral airborne infections. HIV and AIDS. Rabies. Rickettsiosis. Prion infections.	8	2	2		4
Topic 14. Infections of childhood.	4		2		2
Topic 15. Tuberculosis.	8	2	2		4
Topic 16. Sepsis. Particularly dangerous (convection, quarantine) infections. Syphilis.	6	2	2		2
Topic 17. Final lesson. Practical experience.	8		2		6
Together under section 2	104	20	34		50
Total hours of discipline	210	40	70		100

4. The content of the discipline

4.1. Lecture topics

№	Name topics	Number hours
1	Subject and tasks of pathomorphology. Fundamentals of thanatology (birth and death, periods of thanatogenesis, signs of clinical death, causes and early signs of biological death, corpse changes). The main stages of development of pathological anatomy. Methods of pathological diagnosis. Cellular dystrophies: branch-droplet, hydropic, horny, fatty. Pathomorphology of accumulation of complex proteins (hyalinosis) and lipids.	2
2	Pathomorphology of accumulation of products of disturbed metabolism. Disorders of iron metabolism and metabolism of hemoglobinogenic pigments, Pathomorphological manifestations of melanin formation, nucleoprotein and copper metabolism. Calcification (calcification) of tissues. Formation of stones in the organs.	2
3	Necrosis. Clinical and 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
4	Acute systemic circulatory disorders (acute coronary insufficiency, shock) and systemic circulatory disorders in chronic heart failure and their consequences. Regional circulatory disorders (hyperemia, ischemia, plasmorrhagia, bleeding and hemorrhage). Disorders of lymph formation and circulation. Thrombosis. Embolism.	2
5	nflammation: causes, morphogenesis. Pathomorphology of exudative inflammation. Proliferative (productive) inflammation: with the formation of acute genital warts, around parasitic animals, interstitial, granulomatous inflammation. Specific proliferative inflammation.	2
6	Molecular pathomorphological bases of the immune response. Immune system in the prenatal and postnatal period. Pathology of immune processes:	2

	amyloidosis, hypersensitivity reactions, graft rejection reaction. Immune deficiency. Autoimmune diseases.	
7	Regeneration and reparation. Dysregeneration. Structural bases of physiological adaptation of organs and cells. Morphology of cell accommodation processes. Morphology of compensatory-adaptive changes of organs.	2
8	Oncogenesis. Anatomical and microscopic features and types of growth of benign and malignant tumors. Morphological characteristics of the main stages of malignant tumors. Benign and malignant non-epithelial (mesenchymal) tumors. Sarcoma: features of development and metastasis. Tumors of fibroblastic, myofibroblastic and fibrohistiocytic genesis. Tumors of adipose and muscle tissue, tumors of blood vessels.	2
9	Clinical and morphological nomenclature of tumors. Tumors of the epithelium: benign epithelial tumors, cancer (features of development and metastasis, the main histological forms). Melanocyte tumors.	2
10	Tumors of hematopoietic and lymphoproliferative tissue.	2
11	Atherosclerosis. Coronary heart disease. Hypertension and arteriosclerosis. Hypertension and symptomatic hypertension.	2
12	Systemic connective tissue diseases with autoimmunization: rheumatism, systemic lupus erythematosus, rheumatoid arthritis, systemic scleroderma, dermatomyositis, ankylosing spondylitis. Endocardial and myocardial diseases: cardiomyopathies, endocarditis, myocarditis, acquired heart defects	2
13	Respiratory diseases.	2
14	Diseases of the gastrointestinal tract	2
15	Kidney disease.	2
16	Diseases of the pituitary gland. Diabetes. Thyroid disease. Diseases of the adrenal glands.	2
17	General concepts of human infectious pathology. Classification of infectious diseases. Intestinal infectious diseases.	2
18	Viral airborne infections. HIV infection. Rabies. Rickettsiosis. Prion infections. Pediatric infections.	2
19	Tuberculosis.	2
20	Sepsis. Particularly dangerous (convection, quarantine) infections. Syphilis.	2
21	Hours in general.	40

4.2. Topics of practical classes

№	Name topics	Number hours
1	Introduction to pathomorphology. Subject and tasks of pathomorphology. The main stages of development of pathomorphology. Methods of pathological diagnosis. Methods of pathomorphological research.	2
2	Morphological changes of cells in response to stress and toxic damage (parenchymal / cellular dystrophies) Cellular dystrophies: hyaline-droplet, hydropic, fatty.	2
3	Morphological changes of the extracellular matrix (stroma) in response to damage (stromal vascular dystrophy). Pathomorphology of accumulation of complex proteins (hyalinosis) and lipids. Exhaustion of the body.	2
4	Pathomorphology of accumulation of products of disturbed metabolism. Disorders of iron metabolism and metabolism of hemoglobinogenic pigments.	2

	Pathomorphological manifestations of melanin formation, nucleoprotein and copper metabolism. Calcification (calcification) of tissues. Formation of stones in the organs.	
5	Necrosis. Clinical and 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
6	Acute systemic circulatory disorders (acute coronary insufficiency, shock) and systemic circulatory disorders in chronic heart failure and their consequences. Regional circulatory disorders (hyperemia, ischemia, plasmorrhagia, bleeding and hemorrhage). Disorders of lymph formation and circulation.	2
7	Hemostasis disorders: hemorrhagic syndrome, thrombosis, DIC syndrome. Embolism. Pulmonary artery thromboembolism, thanatogenesis.	2
8	Inflammation: causes, morphogenesis. Pathomorphology of exudative inflammation.	2
9	Proliferative (productive) inflammation: with the formation of acute genital warts, around parasitic animals, intermediate productive inflammation, granulomatous inflammation. Specific proliferative inflammation	2
10	Final lesson. Practical experience.	2
11	Molecular pathomorphological bases of the immune response. Immune system in the prenatal and postnatal period. Pathology of immune processes: amyloidosis, hypersensitivity reactions, graft rejection reaction. Immune deficiency. Autoimmune diseases.	2
12	Regeneration and reparation. Dysregeneration. Structural bases of physiological adaptation of organs and cells. Morphology of cell accommodation processes. Morphology of compensatory-adaptive changes of organs.	2
13	Autopsy.	2
14	Oncogenesis. Anatomical and microscopic features and types of growth of benign and malignant tumors. Morphological characteristics of the main stages of malignant tumors. Clinical and morphological nomenclature of tumors. Tumors of the epithelium: benign organ-specific epithelial tumors, cancer (features of development and metastasis, the main histological forms).	2
15	Benign and malignant non-epithelial (mesenchymal) tumors. Sarcoma: features of development and metastasis. Tumors of fibroblastic, myofibroblastic and fibrohistiocytic genesis. Tumors of adipose and muscle tissue, tumors of blood vessels. Melanocyte tumors.	2
16	Tumors of hematopoietic and lymphoproliferative tissue.	2
17	Anemia. Thrombocytopathy.	2
18	Final lesson. Practical experience.	2
19	Atherosclerosis. Coronary heart disease. Hypertension and symptomatic hypertension	2
20	Cerebrovascular diseases (CVD): features of cerebral vessels and cerebral circulation, vascular-dyscirculatory encephalopathies, 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
21	Systemic connective tissue diseases with autoimmunization: rheumatism, systemic lupus erythematosus, rheumatoid arthritis, systemic scleroderma, dermatomyositis, ankylosing spondylitis. Endocardial and myocardial diseases: cardiomyopathies, endocarditis, myocarditis, acquired heart defects.	2

22	Respiratory diseases.	2
23	Diseases of the esophagus, stomach and intestines.	2
24	Diseases of the liver, biliary system and pancreas	2
25	Kidney disease	2
26	Hypothalamic-pituitary disorders. Pathology of the adrenal glands. Pathology of the thyroid gland. Pathology of the endocrine system of the pancreas.	2
27	Diseases of the male and female reproductive systems. Pathology of pregnancy, postpartum and placenta. Breast disease.	2
28	Pre- and perinatal pathology.	2
29	Concluding session.	2
30	Infectious and parasitic diseases. Characteristics of the infectious process. Intestinal infectious diseases	2
31	Viral airborne infections. HIV and AIDS. Rabies. Rickettsiosis. Prion infections.	2
32	Pediatric infections.	2
33	Tuberculosis	2
34	Sepsis. Particularly dangerous (convection, quarantine) infections. Syphilis	2
35	Final lesson. Practical experience	2
36	Hours in general	70

4.3. Individual work

№	Name topics	Number hours
1.	Preparation for practical classes - theoretical training and development of practical skills.	46
2.	Cell-matrix interactions. Cellular and extracellular mechanisms of trophic regulation.	4
3.	Fundamentals of thanatology.	2
4.	Violation of ion-osmotic and water balance, acid-base state.	2
5.	Features of childhood tumors. Embryonic tumors. Germinogenic tumors. Teratomas and teratoblastomas. Tumors of the "adult type".	8
6.	Diseases of the musculoskeletal system. Parathyroid osteodystrophy, osteoporosis, Paget's disease, fibrous dysplasia, osteomyelitis, joint disease, muscular dystrophy, myasthenia. Bone-forming and cartilaginous tumors.	4
7.	Diseases caused by protozoa and helminths.	2
8.	Pathology of changes in diseases related to nutrition. Radiation sickness, nosocomial illness.	2
9.	Occupational diseases.	2
10.	Preparation for the final control of mastering the material for the semester.	8
11.	Systemic vasculitis: nodular periarteritis, Takayasu's arteritis, temporal (giant cell) arteritis, Wegener's granulomatosis, obliterative thromboangiitis, Kawasaki disease, Shenlein-Genoch's purpura, Raynaud's disease and syndrome.	4
12.	Diseases of the central nervous system. Postreanimation encephalopathy and brain death syndrome. Neurodegenerative (neurodystrophic) and demyelinating diseases. Neuritis (neuropathy)	6
13.	Preparation for the final control for the year.	10
14.	Total hours of discipline	100

4.4. Individual tasks: writing essays, preparing presentations, making visual aids (tables, posters, macros)

4.5. Tasks for independent work: preparation of abstracts or presentations on topics from Tables 4.3. "Individual work"

4.6. Teaching methods: survey of students with explanation of key questions of the subject, answers to students' questions, mastering practical skills

Methods of control: test control, oral examination, written answer to the teacher's question

The form of final control of learning success – an exam, during which the control of practical skills acquisition (study of macrodrugs on the topics of general and special course of pathomorphology, work with a microscope, diagnosis of histological specimens, electronic microphotographs), test control.

4.7. Methodical support (educational content).

1. Working curriculum of the discipline;
2. Plans of lectures, practical classes and independent work of students;
3. Abstracts of lectures on the discipline;
4. Methodical developments for the teacher;
5. Methodical instructions for practical classes for students;
6. Methodical materials that provide independent work of students;
7. Test and control tasks for practical classes;
8. Questions and tasks to control the assimilation of the section;
9. List of questions for the exam, tasks to test practical skills during the exam

5. Final control

List of questions for the exam

1. Pathological anatomy: content, tasks, objects, methods and levels of research. Pathological service and its importance in the health care system.
2. The value of biopsy for the recognition of pathological processes. Types of biopsies.
3. Dystrophies: definition, causes of development, morphogenetic mechanisms, structural levels of manifestations and consequences. Classification of dystrophies.
4. Parenchymal fatty dystrophies: classification, causes, mechanisms of development, macro-, microscopic picture, consequences.
5. Parenchymal protein dystrophies: classification, causes, mechanisms of development, macro-, microscopic picture, consequences.
6. Parenchymatous carbohydrate dystrophies: classification, causes, mechanisms of development, macro-, microscopic picture, consequences.
7. Mesenchymal protein dystrophies: types, classification, causes, mechanisms of development, macro-, microscopic picture, consequences.
8. General amyloidosis: classification, causes, mechanism of organ damage, consequences.
9. Mesenchymal carbohydrate dystrophies: causes, mechanisms of development, changes in organs and tissues, consequences.
10. Mesenchymal fatty dystrophies: types, classification, macro-, microscopic picture, causes, mechanisms of development, consequences.
11. Mixed dystrophies. Classification. Metabolic disorders of hemoglobinogenic pigments: morphological changes of organs and tissues.

12. Mixed dystrophies. Metabolic disorders of proteinogenic pigments: morphological changes of organs and tissues.
13. Mixed dystrophies. Disorders of lipidogenic pigment metabolism: morphological changes of organs and tissues.
14. Mixed dystrophies. Disorders of nucleoprotein metabolism: morphological changes of organs and tissues.
15. Disorders of mineral metabolism. The emergence of stones. Causes and mechanism of stone formation. Types of stones. Cholelithiasis. Nephrolithiasis. Consequences of stone formation.
16. Disorders of mineral metabolism. Disorders of calcium metabolism. Calcinosis, their types. Disorders of phosphorus metabolism.
17. Disorders of mineral metabolism. Disorders of copper, potassium and sodium metabolism.
18. Necrosis: definition, causes, mechanism of development and morphological characteristics. Etiopathogenetic types of necrosis.
19. Clinical and morphological forms of necrosis: their characteristics, consequences, significance for the body.
20. Heart attack: causes, types and their morphological characteristics, consequences and significance for the body.
21. Death. Causes of death. Mechanisms of death and signs of death. Morphology of postmortem changes.
22. Apoptosis: definition, significance for the body. Morphogenesis.
23. General and local circulatory disorders. Classification. Arterial plethora: causes, types, morphological characteristics, significance.
24. Acute venous plethora: causes, types, changes in organs, consequences.
25. Chronic venous plethora: morphogenesis of changes in organs, consequences.
26. Anemia. Ischemia and anemia. Causes, types, morphology, consequences.
27. Bleeding and hemorrhage: causes, types, morphological characteristics, consequences, significance.
28. Plasmorrhagia: causes, mechanism of development, morphological characteristics
29. Stasis. Causes, mechanism of development, morphological characteristics, consequences of stasis. Prestasis, the phenomenon of blood coagulation.
30. Thrombosis: definition of the process, causes and mechanism of thrombus formation. Local and general factors of thrombosis (Virchow's triad). Types of blood clots and their structure. Results of thrombosis, significance for the body.
31. DIC syndrome: definition, causes and mechanism of development, stages, changes in organs, consequences.
32. Shock. Causes, mechanism of development, morphological characteristics.
33. Embolism: causes, types, morphological characteristics, consequences and significance of embolism. Pulmonary artery thromboembolism.
34. Lymphatic circulation disorders: causes, types, morphological characteristics, consequences and significance for the body.
35. The concept and biological essence of inflammation. Etiology and pathogenesis of inflammation, morphology of inflammation. The role of humoral and nervous factors in the regulation of inflammation. Age features of inflammation. The value of the reactivity of the organism. Classification of inflammation.
36. Exudative inflammation: types, their morphological characteristics, consequences and significance for the body.
37. Productive inflammation: types, causes and mechanism of development, morphological characteristics, consequences and significance for the body.
38. Granulomatous diseases: definition, classification. Morphology of granulomatous inflammation in tuberculosis, syphilis, leprosy, scleroma, sap, sarcoidosis.

39. Immune reactions and morphology of disorders of immunogenesis. Changes in the thymus in violation of immunogenesis. Age and accidental involution, hypoplasia and hyperplasia of the thymus, thymomegaly.
40. Changes in peripheral lymphoid tissue in violation of immunogenesis and antigenic stimulation, morphological and immunomorphological characteristics.
41. Immediate and delayed type hypersensitivity reactions, transplant immune reactions: morphogenesis, morphological characteristics, connection with inflammation, clinical significance.
42. Autoimmunization and autoimmune diseases: etiology, mechanisms of development, classification, morphological characteristics.
43. Immunodeficiency syndromes primary and secondary: clinical and morphological characteristics. AIDS.
44. Compensatory-adaptive reactions: definition, essence, biological and medical value. Phase nature of the compensatory-adaptive process.
45. Regeneration: definition, levels of manifestation, morphogenesis and regulation of the regenerative process. Types of regeneration.
46. Regeneration of various organs and tissues. Morphology of wound healing.
47. Types of pathological regeneration. Metaplasia, dysplasia: definition, causes, morphological characteristics, consequences.
48. Hypertrophy and hyperplasia: definition, types, phases of development, morphological manifestations, significance for the organism.
49. Atrophy: definition, types, morphological changes in organs and tissues. The value of atrophy for the body.
50. Organization: forms, mechanism of development and morphological characteristics. Sclerosis and cirrhosis. Concepts, reasons, mechanism of development, morphological characteristics.
51. Tumors: definition, distribution, etiology and pathogenesis. Methods of morphological diagnosis (histological, immunohistochemical, ultrastructural).
52. Morphogenesis and histogenesis of tumors, especially tumor cells. Precancerous conditions and precancerous changes, their essence and morphological characteristics. Tumor progression.
53. Appearance and structure of tumors, tumor growth. Types of atypism.
54. Benign, malignant tumors and tumors with locally destructive growth. Criteria of malignancy. Tumor metastasis. Recurrences and secondary changes in the organs.
55. Modern classification of tumors, the principles of its construction. Teratomas.
56. Benign and malignant mesenchymal tumors: histological variants, morphological characteristics.
57. Tumors of epithelial origin: histological variants, general morphological characteristics. Cancer, its types and their morphological characteristics.
58. Organ-specific tumors of epithelial origin: histological forms, general morphological characteristics.
59. Organospecific tumors of epithelial origin: histological forms, general morphological characteristics.
60. Tumors of melanin-forming tissue: histological forms, general morphological characteristics.
61. Tumors of the brain and peripheral nervous system: histological variants, morphological characteristics. Features of neuroepithelial tumors.
62. Tumors of the blood system (hemoblastosis): classification. Leukemias: etiology, pathogenesis, classification, general pathomorphological characteristics.
63. Acute leukemia: forms, pathomorphological manifestations, complications.
64. Chronic leukemias of myelocytic origin: forms, pathomorphological manifestations, complications.

65. Chronic leukemias of lymphocytic and monocytic origin: forms, pathomorphological manifestations, complications.
66. Paraproteinemic leukemias: pathomorphological manifestations, complications.
67. Lymphomas: etiology, pathogenesis, forms, morphological characteristics.
68. Lymphogranulomatosis: etiology, pathogenesis, forms, pathomorphological manifestations, complications.
69. Anemia: definition, etiology, pathogenesis, classification. Pathomorphological characteristics of posthemorrhagic anemias.
70. Anemia due to hematopoietic disorders: classification, pathomorphological characteristics.
71. Hemolytic anemias: classification, pathomorphological characteristics.
72. Atherosclerosis: etiology, pathogenesis, stages (macro- and microscopic), clinical and morphological forms, their characteristics, causes of death.
73. Arterial hypertension: classification, etiology and pathogenesis of arterial hypertension, clinical and morphological forms and their characteristics, causes of death.
74. Cerebrovascular diseases: classification, etiology and pathogenesis, morphological characteristics, results and causes of death.
75. Ischemic heart disease: concept, WHO classification, connection with atherosclerosis and hypertension. Sudden coronary death.
76. Myocardial infarction: stages, morphological characteristics, complications and causes of death.
77. Chronic ischemic heart disease: types of cardiosclerosis, morphological characteristics, complications, causes of death.
78. Vasculitis: their types, causes, mechanism of development. Nodular periarteritis: etiology, pathogenesis, morphological characteristics, consequences.
79. The concept of rheumatic diseases. Morphological characteristics of immune disorders and processes of systemic connective tissue disorganization. Classification of rheumatic diseases.
80. Rheumatism: definition, etiology, patho- and morphogenesis, clinical and morphological forms.
81. Changes in the heart (endocarditis, myocarditis, pericarditis, pancarditis) and blood vessels in rheumatism. Rheumatic heart disease. Complications and causes of death.
82. Rheumatoid arthritis: etiology, pathogenesis, morphological characteristics, consequences. Complications and causes of death.
83. Ankylosing spondylitis: etiology, pathogenesis, morphological characteristics, complications and causes of death.
84. Systemic lupus erythematosus: definition, etiology, pathogenesis, morphological characteristics, complications, consequences, causes of death.
85. Dermatomyositis: definition, etiology, pathogenesis, morphological characteristics, complications, causes of death.
86. Scleroderma: definition, etiology, pathogenesis, pathological anatomy, complications, consequences, causes of death.
87. Sjogren's syndrome: etiology, morphological anatomy, complications.
88. Acute bronchitis: definition, etiology, pathogenesis, morphological characteristics, complications.
89. Lobar pneumonia: etiology, pathogenesis, morphological characteristics of the stages of lobar pneumonia, complications.
90. Bronchopneumonia: etiology, pathogenesis, pathogenetic species, morphological characteristics of pneumonia depending on the nature of the pathogen, complications.
91. Intermediate (interstitial) pneumonia: etiology, pathogenesis, morphological characteristics, results.

92. Acute destructive processes in the lungs (abscess, gangrene): pathogenesis, morphological characteristics.
93. Chronic bronchitis: etiology, pathogenesis, morphological characteristics, complications. The concept of chronic obstructive pulmonary disease.
94. Bronchiectasis and bronchiectasis: definition, etiology, pathogenesis, morphological characteristics, complications.
95. Emphysema of the lungs: definition, etiology, pathogenesis, types, morphological characteristics, consequences.
96. Bronchial asthma: etiology, pathogenesis, morphological characteristics, complications.
97. Interstitial lung diseases and pneumofibrosis: etiology, pathogenesis, morphological characteristics.
98. Pneumoconiosis. Classification. Morphological characteristics of silicosis and anthracosis, complications.
99. Lung cancer: prevalence, etiology, pathogenesis, precancerous conditions. Morphological characteristics of basal and peripheral lung cancer, complications, radiological and histological forms. Patterns of metastasis.
100. Pleurisy: etiology, pathogenesis, morphological characteristics, complications and consequences. The concept of collapse and atelectasis of the lungs.
101. Tonsillitis: etiology, pathogenesis, pathomorphological characteristics, complications.
102. Diseases of the esophagus (diverticula, esophagitis): etiology, pathogenesis, pathomorphological characteristics, complications. Barrett's esophagus.
103. Esophageal cancer: etiology, pathogenesis, classification, morphological characteristics, complications.
104. Acute gastritis: etiology and pathogenesis, pathomorphological characteristics, complications.
105. Chronic gastritis: the essence of the process, causes and mechanism of development, morphological variants, their characteristics, complications.
106. Gastric and duodenal ulcer: etiology, pathogenesis, pathomorphological characteristics in the period of exacerbation and remission, complications and consequences.
107. Gastric cancer: etiology, pathogenesis, clinical and morphological classification, histological forms, complications, patterns of metastasis.
108. Appendicitis: etiology, pathogenesis, classification, pathomorphological characteristics, complications.
109. Enteritis (acute and chronic): etiology, pathogenesis, pathomorphological characteristics, complications.
110. Colitis (acute and chronic): etiology, pathogenesis, pathomorphological characteristics, complications.
111. Nonspecific ulcerative colitis: etiology, pathogenesis, pathomorphological characteristics, complications.
112. Crohn's disease: etiology, pathogenesis, pathomorphological characteristics, complications.
113. Tumors of the intestine. Colon cancer: prevalence, etiology, pathogenesis, forms, pathomorphological characteristics, patterns of metastasis, complications.
114. Toxic liver dystrophy (progressive liver necrosis): etiology, pathogenesis, pathomorphological characteristics, complications and consequences, the relationship with liver cirrhosis.
115. Fatty hepatitis (hepatic steatosis): etiology, pathogenesis, pathomorphological characteristics, complications and consequences.
116. Viral hepatitis: classification, etiology, epidemiology, pathogenesis, clinical and morphological forms and their pathomorphological characteristics, complications and consequences.

117. Alcoholic hepatitis: acute and chronic, mechanism of development, pathomorphological characteristics, complications, consequences. Alcoholic hepatitis and liver cirrhosis.
118. Autoimmune hepatitis: mechanism of development, morphological characteristics. Drug-induced hepatitis.
119. Cirrhosis of the liver: etiology, patho- and morphogenesis, clinical and morphological characteristics of forms of cirrhosis. Hepatic and extrahepatic changes in cirrhosis, complications and causes of death.
120. Liver cancer: causes, significance of liver cirrhosis as a precancerous condition, forms (macro- and microscopic), complications, patterns of metastasis.
121. Pancreatitis: etiology, pathogenesis, morphological changes in acute and chronic pancreatitis, complications and consequences.
122. Tumors of the pancreas: causes, mechanism of development, frequency of localization in different parts of the gland, morphological characteristics.
123. Diseases of the gallbladder. Cholelithiasis. Pathological anatomy of cholecystitis, complications. Gallbladder cancer.
124. Modern clinical and morphological classification of kidney disease. Glomerulonephritis: etiology, pathogenesis, classification.
125. Acute glomerulonephritis: etiology, pathogenesis, morphological characteristics, consequences.
126. Subacute glomerulonephritis: etiology, pathogenesis, morphological characteristics, consequences.
127. Chronic glomerulonephritis: etiology, pathogenesis, morphological characteristics, consequences.
128. Non-inflammatory glomerulopathies (focal segmental glomerular hyalinosis, membranous nephropathy, lipoid nephrosis): etiology, pathogenesis, morphological characteristics, consequences.
129. Amyloidosis of the kidneys: etiology, pathogenesis, pathomorphological characteristics, complications and consequences.
130. Acute renal failure (necrotic necrosis): etiology, pathogenesis, pathomorphological characteristics, complications and consequences.
131. Tubulointerstitial nephritis: etiology, pathogenesis, morphological characteristics, complications, consequences.
132. Pyelonephritis: etiology, pathogenesis, pathomorphological characteristics, complications and consequences.
133. Nephrosclerosis: etiology, patho- and morphogenesis, types, pathomorphological characteristics, complications and consequences.
134. Chronic renal failure: pathogenesis, morphological characteristics. Uremia.
135. Kidney stone disease (nephrolithiasis): etiology, pathogenesis, pathomorphological characteristics, complications, consequences. Connection with pyelonephritis.
136. Kidney tumors. Renal cell carcinoma: causes, morphological characteristics. Bladder and bladder cancer.
137. Diseases of the pituitary gland: acromegaly, gigantism, pituitary dwarfism, cerebral-pituitary cachexia (Simmonds' disease), adipogenital dystrophy and diabetes mellitus. Etiology, pathogenesis, morphological characteristics, complications.
138. Conditions caused by hyperfunction of the adrenal cortex (Itsenko-Cushing's syndrome, Kona's syndrome, adrenogenital syndrome). Etiology, pathogenesis, morphological characteristics, causes of death.
139. Addison's disease: etiology, pathogenesis, morphology, causes of death. Acute adrenal insufficiency.
140. Goiter (Current): classification. Causes, mechanism of development, morphological characteristics of endemic goiter, complications.

141. Thyrotoxic (Bazedov) goiter: etiology, pathogenesis, morphological characteristics, complications, cause of death.
142. Thyroiditis: etiology, pathogenesis, species, morphological characteristics, complications, cause of death. The concept of hypothyroidism.
143. Adenomas and thyroid cancer: etiology, pathogenesis, pathomorphological characteristics, complications and consequences.
144. Diabetes mellitus: etiology, pathogenesis, pathomorphological characteristics, complications and causes of death.
145. Diabetes mellitus: features of diabetic micro- and macroangiopathy. Morphological characteristics of glomerulosclerosis.
146. Diseases of the genitals and breast dyshormonal nature in men: gynecomastia and benign prostatic hyperplasia. Forms of BPH, morphological characteristics, complications.
147. Diseases of the genitals of a hormonal nature in women: glandular hyperplasia of the endometrium and pseudo-erosion of the cervix. Morphological characteristics, complications.
148. Diseases of the mammary gland of dyshormonal nature in women (benign breast dysplasia): classification; morphological characteristics, complications.
149. Inflammatory diseases of the female genitals and breast: etiology, pathogenesis, morphological characteristics, complications.
150. Inflammatory diseases of the male genital organs and breast: etiology, pathogenesis, morphological characteristics, complications.
151. Breast cancer: frequency, causes, precancerous conditions, morphological characteristics, histological forms, patterns of metastasis, complications.
152. Tumor diseases of the uterus and ovaries (benign and malignant): classification, morphological characteristics, histological variants, ways of metastasis.
153. Tumor diseases of the prostate and testicles: classification, morphological characteristics, histological variants, ways of metastasis, complications.
154. The concept of trophoblastic diseases. Bladder snow and chorionepithelioma: morphological characteristics, complications.
155. Pathology of pregnancy (gestosis, ectopic pregnancy, miscarriage and premature birth). Causes, types, morphological characteristics, complications.
156. Definition of VPR syndromes, examples. Phenotypic characteristics of Down syndrome, Patau syndrome and alcohol syndrome. The main VPR of individual organs and systems, their name.
157. Definition, cellular and tissue mechanisms of teratogenesis, the concept of determining the teratogenic termination period and critical periods. Etiology, classification, basic principles. Terminology in teratology.
158. Prematurity and tolerability. Prenatal pathology. The concept of periodization and patterns of progenesis and chematogenesis. Diseases of progenesis and chematogenesis. Causes, mechanism of development, morphological characteristics.
159. Gametopathy. Blastopathy. Embryopathy. Infectious and non-infectious fetopathies.
160. General characteristics of infectious diseases. General morphological characteristics of the infectious process, local and general changes. Classification of infectious diseases. Complications of infectious diseases, causes of death. Pathomorphosis of infectious diseases.
161. Influenza and parainfluenza: the main forms and their morphological manifestations, complications and consequences.
162. Viral infections (adenovirus infection, respiratory syncytial infection, rhinovirus infection): etiology, pathogenesis, pathomorphological characteristics, complications and consequences.
163. Herpes infection: etiology, pathogenesis, forms of lesions, morphological characteristics, complications, consequences.
164. Measles: source and routes of infection, pathogenesis, morphological manifestations, complications, consequences.

165. Rage: etiology, pathogenesis, morphological characteristics, complications, consequences.
166. Mumps: etiology, pathogenesis, morphological characteristics, complications, consequences.
167. Natural and chickenpox: etiology, pathogenesis, forms of the disease, morphological manifestations, consequences.
168. Salmonellosis: etiology, epidemiology, pathogenesis, ways and sources of infection, pathomorphological characteristics of changes in the body, consequences.
169. Typhoid fever: etiology, pathogenesis, pathomorphological characteristics, complications and consequences.
170. Intestinal coli infection: etiology, pathogenesis, pathomorphological characteristics, complications and consequences.
171. Dysentery: sources and routes of infection, pathogenesis, pathomorphological characteristics, complications and consequences.
172. Yersiniosis: etiology, pathogenesis, basic clinical and morphological manifestations, pathomorphological characteristics, complications and consequences.
173. Cholera (El-Thor): etiology, pathogenesis, main clinical and morphological manifestations, pathomorphological characteristics, complications and consequences.
174. Diseases caused by the simplest (amebiasis, balantidiasis, giardiasis): etiology, pathogenesis, pathomorphological characteristics, complications and consequences.
175. Epidemic and sporadic typhus: sources and routes of infection, pathogenesis, pathomorphological characteristics, complications and consequences.
176. Polio: sources and routes of infection, pathogenesis, pathomorphological characteristics, complications and consequences.
177. Scarlet fever: etiology, pathogenesis, main manifestations of the disease and its varieties, pathomorphological characteristics, complications and consequences.
178. Diphtheria: etiology, pathogenesis, pathomorphological characteristics, complications and consequences.
179. Whooping cough: sources and ways of infection, the main changes in the organs, complications and consequences.
180. Meningococcal infection: etiology, sources and routes of infection, pathogenesis, clinical and morphological forms, major changes in organs, complications and consequences.
181. Scleroma, leprosy, sap: sources and routes of infection, major changes in the organs, complications and consequences.
182. Plague: etiology, epidemiology, pathogenesis, pathological anatomy, complications, causes of death.
183. Brucellosis: sources and routes of infection, major changes in the organs, complications and consequences.
184. Tularemia: sources and routes of infection, major changes in the organs, complications and consequences.
185. Anthrax: sources and routes of infection, major changes in the organs, complications and consequences.
186. Sepsis: etiology, pathogenesis, classification (clinical and anatomical, at the entrance gate), pathomorphological manifestations in the organs. The main differences between the disease and other infectious diseases.
187. Primary tuberculosis: etiology, pathogenesis, ways of infection, forms, morphological characteristics, complications and consequences.
188. Hematogenous tuberculosis: types, morphological characteristics, organ damage, results.
189. Secondary tuberculosis: pathogenesis of the disease, forms, their course, complications, consequences.

190. HIV infection: etiology, epidemiology, pathogenesis, stages, morphological characteristics of AIDS, complications, causes of death.

191. Congenital malformations: classification, causes of development.

192. Congenital heart disease: etiology, classification. Clinical and morphological manifestations of atrial septal defect, ventricular septal defect, congenital heart defects with impaired division of the arterial trunk, open ductus arteriosus, coarctation of the aorta.

193. Congenital malformations of the central nervous system: etiopathogenesis, classification, clinical and morphological manifestations.

194. Fetopathies: definition, classification, etiopathogenesis, main clinical and

"0" version of the exam ticket:

Form № H - 5.05

Petro Mohyla Black Sea National University

Level of higher education - master

Field of knowledge: 22 "Health"

Specialty: 222 "Medicine"

Course - **PATOMORPHOLOGY**

Exam ticket № 0

1. Heart attack: causes, types and their morphological characteristics, consequences and significance for the body. – The maximum number of points is 20

2. Embolism: causes, types, morphological characteristics, consequences and significance of embolism. Pulmonary artery thromboembolism. – The maximum number of points -20

3. Systemic lupus erythematosus: definition, etiology, pathogenesis, morphological characteristics, complications, consequences, causes of death. – The maximum number of points -20

4. Situational task:

The patient suffered from bronchiectasis for many years. During the last year, protein up to 10 g per day was found in the urine, the amount of protein in the blood plasma was reduced. There was swelling. Hyperazotemia developed, death occurred from renal failure.

QUESTION:

1) What pathological process in the kidneys complicated the course of bronchiectasis?

2) In what other organs could this process develop simultaneously?

3) What are the macro- and microscopic characteristics of the kidneys? – The maximum number of points is 10

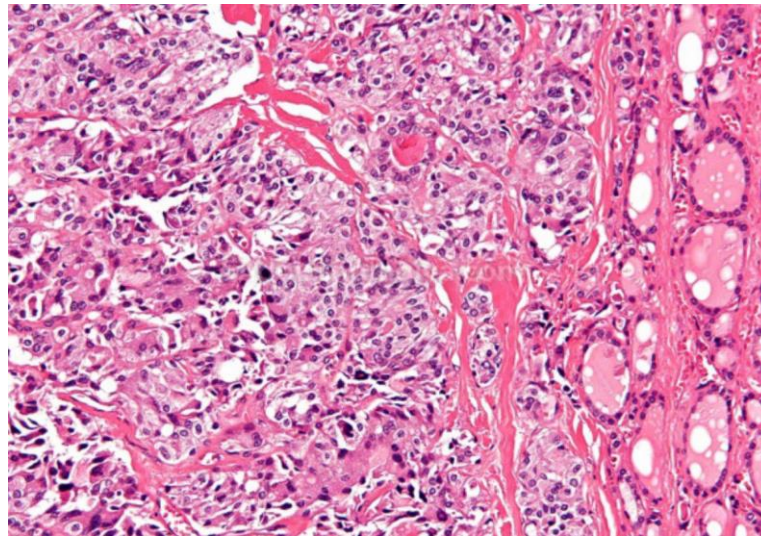
5. Macro- and micropreparation ** (see below) – Maximum number of points - 10

Approved at the meeting of the Department of Anatomy, Clinical Anatomy and Operative Surgery, Pathomorphology and Forensic Medicine № 7 dated February 5, 2020.

Head of the Department _____ Dr. Med. Sciences, Prof. Chernov VS

Examiners _____ Dr. Med. Sciences, Prof. Kharchenko OV

_____ Art. teacher Silenko OO



**** SCHEME OF DESCRIPTION OF DRUGS**

MACROPREPARATION

MICROPREMAT

NAME OF ORGAN / TISSUE

APPEARANCE

1. SIZE
2. FORM
3. COLOR
4. SURFACE (relief, brilliance)
5. CAPSULE CONDITION
6. CONSISTENCY
7. PRESENCE OF PATHOLOGICAL LOCATIONS (HEALTHS, PLOTS)

APPEARANCE OF SECTION SURFACE:

1. CONFORMITY OF STRUCTURE
2. FOR HOLLOW ORGANS: cavity size, wall thickness
3. PATHOLOGICAL CELLS (FIREPLACES, PLOTS): localization, shape, color, boundaries

1. GENERAL STRUCTURE AND NUMBER OF CELLS (increased / decreased)
2. CONFORMITY OF FABRIC STRUCTURE
3. RELATIONSHIP BETWEEN PARENCHYM AND STROMA

DESCRIPTION DETAILS:

1. SIZE AND SHAPE OF THE CELL
2. CELL NUCLEI: location, number, functional state
3. CYTOPLASM OF CELLS: color, transparency, presence of inclusions
4. PATHOLOGICAL CHANGES: localization, character

TYPE OF PATHOLOGICAL PROCESS

DIAGNOSIS

*- A certain number of exam tickets is not provided, during the exam the student collects a set of exam tasks himself: three theoretical questions on cards of one color, a situational problem with

cards of another color, macro- and micropreparation for description and interpretation in the form of printed electronic photos.

6. Evaluation criteria and tools for diagnosing learning outcomes

6.1. Control methods

- test control,
- oral examination,
- written answer to the teacher's questions.

Current control. The current learning activities (PND) of students are monitored in practical classes in accordance with specific goals and during the individual work of the teacher with students.

The following tools are used to diagnose the level of preparation of students: computer tests; solving situational problems; structured written works; structured control of practical skills and abilities (assessment of knowledge and skills to analyze and interpret macro- and microscopic changes of cells, tissues, organs and systems in certain pathological processes).

Intermediate control. Checking the possibility of students using for pathomorphological clinical and diagnostic analysis of theoretical knowledge and practical skills on all topics studied by students before. Carried out in intermediate final classes (PPZ) by passing practical skills, solving situational problems and testing. PPPs must be conducted in accordance with this **Discipline Work Curriculum (RNPД)** during the semester on a schedule and are included in the practical training plan. Admission to the PPP is carried out by a teacher of the academic group.

Materials for preparation for PPP are placed on the information stand:

- basic and anchor test tasks LII "Step";
- list of theoretical questions (including questions on independent work);
- list of practical skills;
- list of drugs;
- criteria for assessing the knowledge and skills of students;
- schedule of students completing missed classes during the semester.

Control of independent work. Control and evaluation of independent work of students, which is provided in the topic along with classroom work, is carried out during the current control of the topic in the relevant classroom. Assimilation of topics that are submitted only for independent work and are not included in the topics of classroom training, is controlled during the final control.

Control of individual student tasks. The meeting of the department approves the list of individual tasks (participation with reports in student conferences, profile competitions, preparation of analytical reviews with presentations with plagiarism) with the definition of the number of points for their implementation, which can be added as incentives (not more than 10). Points for individual tasks are accrued to the student once only on a commission basis (commission - head of the department, head teacher, group teacher) only if they are successfully completed and defended. In no case may the total amount of points for IPA exceed 120 points.

Final control in the form of final control work (FQM) is carried out upon completion of the study of all topics of general or special pathomorphology at the last control lesson of the relevant semester. Students who have completed the full scope of educational activities for the semester provided by the curriculum, and during the study of the section scored a number of points not less than the minimum are admitted to the final control.

The form of final control is standardized and includes control of theoretical and practical training:

1. Solving a package of test tasks on the content of educational material, which includes the following: basic test tasks in the discipline, which cover the content of educational material of the final lesson in accordance with RNPД in the amount of at least 30 tests (for disciplines

that are part of LII "Step" - open database of test tasks LII "Step". Evaluation criterion - 90.5% of correctly solved tasks; "passed" or "failed");

2. Assessment of the development of practical skills (assessment criteria - "performed" or "failed").

In order to assess the learning outcomes of the entire discipline is also a final control in the form of an exam, which is recommended for academic disciplines, which is part of the integrated test exams EDKI and "Step-2".

Students who have attended all lectures, classroom classes, completed full independent work and scored at least **70 points in the fall semester in the fall semester and 40 points in the spring semester are admitted to the RCC.**

Only students who have both PKRs (according to sections 1 and 2) in the discipline are admitted to the exam.

The discipline exam is a process during which the results obtained during the course (semester) are checked:

- level of theoretical knowledge;
- practical experience;
- development of creative thinking;
- skills of independent work;
- competencies - the ability to synthesize the acquired knowledge and apply them in solving practical problems.
- ability to synthesize the acquired knowledge and apply it in solving practical problems.

The exam is held according to the schedule of the session, approved by the rector, indicating the specific dates of the exams, which are outside the semester.

If the exam is not passed, the dates of re-setting during the holidays are set, until the beginning of the next semester.

Exam procedure:

1. Solving a package of test tasks at the last or penultimate lesson in the semester, which includes basic (anchor) test tasks LII in the amount of at least 30 tests. Evaluation criterion - 100% of correctly solved tasks, "passed - failed".
2. Assessment of the acquisition of practical skills and theoretical knowledge on all topics of the discipline on the day of the exam. Assessment of theoretical knowledge, if practical skills are assessed by the criteria of "performed", "failed".
3. Tasks for practical and professional training that reflect the skills and abilities in the study of macro-micropreparations are defined in the list of this RNPД and OPP specialty.

Assessment of theoretical knowledge is carried out on the basis of tickets drawn up at the department, which include all topics of the discipline (see above).

Distribution of points received by students

In the autumn semester, a positive assessment in each practical session can be from **4 points** (70 points: 17 practical classes / topics) to **7 points** (120: 17). A score below 4 points means "unsatisfactory", the lesson is not credited and is subject to practice in the prescribed manner.

On PKR under section 1 the student can receive a maximum of **80 points**. PKR is considered credited if the student scored at **least 50 points**.

In the spring semester, a positive grade in a practical session can range from 2.5 points (40 points: 16 practical classes / topics) to **5 points** (80:16). A score below 2.5 points means "unsatisfactory", the lesson is not credited and is subject to practice in the prescribed manner.

On PKR under section 2 the student can receive a maximum of **40 points**. PKR is

considered credited if the student scored at least 30 points.

At the exam, a student can get a maximum of **80 points**. The exam is considered passed if the student received at **least 50 points**. The distribution of points on the exam, see above in the example of the exam ticket.

Assessment of student performance

Type of activity (task)	Maximum number of points
Section 1 (Autumn Semester)	
Topic 1	7
Topic 2	7
Topic 3	7
Topic 4	7
Topic 5	7
Topic 6	7
Topic 7	7
Topic 8	7
Topic 9	7
Topic 10	7
Topic 11	7
Topic 12	7
Topic 13	7
Topic 14	7
Topic 15	7
Topic 16	7
Topic 17	7
Together	120
Final test work under section1	80
Together under section 1	200
Chapter 2 (Spring Semester)	
Topic 1	5
Topic 2	5
Topic 3	5
Topic 4	5
Topic 5	5
Topic 6	5
Topic 7	5
Topic 8	5
Topic 9	5
Topic 10	5
Topic 11	5
Topic 12	5
Topic 13	5
Topic 14	5
Topic 15	5
Topic 16	5
Разом	80
Final control work under section 2	40
Together under section 2	120
Examination	80
Together for section 2 and the exam	200

Criteria for assessing knowledge

Scoring 7 points in the autumn semester (5 points in the spring semester), 71-80 points on the RCC in the autumn semester (38-40 points in the spring semester) and 71-80 points on the exam (A on the ECTS scale and 5 on the national scale) the student's answer is evaluated if it demonstrates a deep knowledge of all theoretical positions and the ability to apply theoretical material for practical analysis and has no inaccuracies.

A score of 5-6 points in the autumn semester (4 points in the spring semester), 61-70 points on the RCC in the autumn semester (35-37 points on the RCC in the spring semester) and 61-70 points on the exam on the ECTS scale and 4 on a national scale) the answer is evaluated if it shows knowledge of all theoretical positions, the ability to apply them in practice, but some fundamental inaccuracies are allowed.

A score of 4 points in the fall semester (2.5-3 points in the spring semester), 50-60 points on the RCC in the fall semester (30-34 points on the RCC in the spring semester) and 50-60 points on the exam (D and E for ECTS scale and 3 on the national scale) the student's answer is evaluated provided that he knows the main theoretical principles and can use them in practice.

More detailed evaluation criteria in practical classes

7 points in the autumn semester (5 points in the spring semester) - the student correctly answered 90-100% of the tests of format A. Correctly, clearly and logically and fully answers all standardized questions of the current topic, knows the material of previous topics (initial level of knowledge) , answers the questions of the lecture course and questions on independent work. Properly demonstrates the drug (knowledge of practical skills), correctly uses Latin terms. Makes a generalization of the material, complements his answer with knowledge of additional literature. He wrote down in the dictionary all Latin terms and their equivalents in Ukrainian on the topic of the lesson. Completed all the tasks provided by the methodological developments during the independent work of the student.

Wrote an essay on the proposed topic or made an anatomical drug (individual work).

5-6 points in the autumn semester (4 points in the spring semester) - the student correctly answered 70-90% of A-format tests. Correctly, sometimes with the help of explanatory questions, answers standardized questions of the current topic, knows the material of previous topics (initial level of knowledge) , answers the questions of the lecture course and questions on independent work. Properly demonstrates the drug (knowledge of practical skills). The student uses Latin terms correctly. He wrote down in the dictionary all Latin terms and their equivalents in Ukrainian on the topic of the lesson. Completed all the tasks provided by the methodological developments during the independent work of the student.

4 points in the autumn semester (2.5-3 points in the spring semester) - the student correctly answered 50 -70% of A-format tests. Incomplete, with the help of explanatory questions, answers standardized questions of the current topic, questions from the material of previous topics (initial level of knowledge), inaccurately and incompletely answers the questions of the lecture course and questions from independent work. Cannot build a clear, logical answer on their own. During the answer and demonstration of the drug (knowledge of practical skills) the student makes minor mistakes. The student uses Latin terms with errors, or does not fully know the Latin terms on the topic of the current lesson and previous lessons. He wrote in the dictionary not entirely Latin terms and their equivalents in Ukrainian on the topic of the lesson. He did not fully perform the tasks provided for in the methodological developments during the student's independent work.

Less than 4 points in the autumn semester (3 points in the spring semester) - the student answered less than 50% of the tests of format A. Does not know the material of the current topic. Or answers the questions of the current topic insufficiently, incompletely, can not

build a logical answer, does not answer additional questions, does not understand the content of the material, does not know the questions from the material of previous topics (initial level of knowledge), does not answer the lecture course and questions independent work. During the answer and demonstration of the drug (knowledge of practical skills) the student makes significant, gross mistakes. The student does not know Latin terms on the topic of the current lesson and previous lessons, or uses Latin terms with errors. He did not write Latin terms and their equivalents in Ukrainian in the dictionary on the topic of the lesson. Did not fulfill the tasks provided by methodical developments during independent work of the student.

7. Recommended Books

Basic

1. Pathomorphology: nat. near. / VD Markovsky, VO Tumansky, IV Sorokina et al., Ed. VD Markovsky, VO Tumansky. - K. : VSV "Medicine", 2015. - 936p., Color. view. ISBN 978-617-505-450-5
2. Kumar V. Robbins Basic Pathology 10th edition / Kumar V., Abbas AK, Aster J.C. - Canada: Elsevier Health Sciences, 2017. - 910 p.

Auxiliary

1. Strukov AI Pathological anatomy: textbook: lane. from the Russians. / AI Strukov, VV Serov. - 4-е вид .. - X. : Факт, 2004. - 864 с.
2. Shlopov VG Pathological anatomy: a textbook / VG Shlopov. - Vinnytsia: Nova Kniga, 2004. - 768 p.
3. Strukov AI Pathological anatomy: a textbook / AI Strukov, VV Serov. - 5th ed., P. - M. : Litterra, 2010. - 880 p. : ill.
4. Gasyuk AP General and special pathological anatomy (rating system): textbook. way. / AP Gasyuk [et al.]. - Poltava: Ukrainian Medical Dental Academy, 2004. - 309 p.
5. Sinelnikov A. Ya. Atlas of macroscopic human pathology. - M. : RIA "New Wave": Publisher Umerenkov, 2007. - 320 pp.: Ill.
6. Paltsev MA Atlas of pathological anatomy. / M.A. Paltsev, AB Ponomarev, Berestova AV - M. Medicine, 2007. - 432 p.
7. Clatt E. Atlas of pathology: lane with English. / Э. Clatt. - Elby SPb, 2010. - 532 p.
8. Pathological anatomy: Textbook / Strukov AI, Serov VV / Per. from the Russian. 4th ed., Stereotypical. - H. : Fakt, 2004. - 864 p., Ill.
9. Pathological anatomy (general pathological processes) / VM Blagodarov, PI Worm, K.O. Галахін, Л.О. Stechenko, VA Dibrova, MB. Khominska, MA Kononchuk (edited by VM Blagodarov and PI Chervyak). -K. : Genesis, 1997.
10. Lectures on general pathological anatomy (general course). / Ed. V.V. Serova, MA Paltseva - M: Medicine, 1996.
11. Lectures on pathological anatomy of diseases (private course) / Ed. V.V. Serova, MA Paltseva - M: Medicine, 1996.
12. Serov VV, Yarygin NE, Paukov VS Pathological anatomy. Atlas. -M: Medicine, 1986.
13. Serov VV, Drozd TN, Varshavsky VA, Tatevosyants GO A guide to practical classes on pathological anatomy. - M: Medicine, 1987.
14. Sorokina IV Pathological anatomy. Pathological anatomy: A textbook for students / I.V. Sorokina, AF Яковцова. - H. : Fact, 2004. - 648 p. : ill.
15. Sorokina IV Lectures in Pathological anatomy / I.V. Sorokina, AF Yakovtsova. - Kharkiv: Tornado, 2000. - 254 p.
16. Anderson's Pathology // Edited by John M. Kissane. The C.V. Mosby Company. - Toronto - Philadelphia, 1990. -2196 p.
17. Thomas C. Macropathology / Thomas C. - Toronto, Philadelphia: B.C. Decker Inc., 1990. - 355 p.

Information resources

1. University websites and electronic resources of the Internet
2. Testing center - base of licensed test tasks "Step-1"
3. Elements: News of science [http //elementy.ru/](http://elementy.ru/).
4. <http://library.med.utah.edu/WebPath/webpath.html>
5. <http://www.webpathology.com/https://www.geisingermedicallabs.com/lab/resources.shtml>