

**Academic programme
component**

**31.05.01 General Medicine
programme**

**Б1.0.27
discipline code**

SYLLABUS

Discipline Б1.0.27 Anatomical Pathology

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Approved at the meeting of the
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Murmansk

2024

Clarification

Discipline volume: 11 credit points

1. Discipline (module) training results correlated with the indicators of competencies achievement determined by the educational programme

Competency	Indicators of competency achievement	Discipline (module) training results
<p>ОПК-5. Can analyze morphofunctional and physiological indicators as well as pathological processes in human body to achieve professional goals</p>	<p>ИД-1ОПК-5. Functional, physiological conditions and pathological processes of the human body based on knowledge of the structure and principles of cell activity, development and functioning of tissues;</p> <p>ИД-3ОПК-5. Defines and analyzes morphological, functional, physiological conditions and pathological processes in the human body based on knowledge about the structure and topography of internal organs</p>	<p>To know:</p> <ul style="list-style-type: none"> - the normal structure of organs and body systems; - concepts of etiology, pathogenesis, morphogenesis, pathomorphosis of the disease; - the essence and basic patterns of general pathological processes; - characteristic changes in internal organs in the most important human diseases; - principles of clinical and anatomical analysis of biopsy and surgical material - macroscopic and microscopic changes in pathological altered tissues and organs; - an algorithm for analyzing and interpreting the results of research on biopsy and surgical material; <p>To be able to:</p> <ul style="list-style-type: none"> - evaluate and compare normal and altered morphofunctional indicators; - interpret the results of research on biopsy and surgical material to solve professional problems and formulate a diagnosis according to the ICD <p>To have:</p> <ul style="list-style-type: none"> - skills in working with macro- and micro-preparations; - skills in determining the characteristic changes of internal organs in the most important human diseases; - skills in interpreting the results of research on biopsy and surgical material

2. Discipline contents

№	Topic	Contents
General pathology		
1.	Damage and death of cells and tissues	Morphology of cell damage. Morphology of reversible and irreversible damage, death of cells and tissues. Necrosis and apoptosis. Causes, pathogenesis, clinical and anatomical forms of necrosis. Microscopic signs, outcomes and consequences of necrosis. Signs of death, postmortem changes.
	Dystrophy	Parenchymal dystrophy. Impaired metabolism of proteins, fats and carbohydrates. Violation of mineral metabolism

2.		Stromal vascular dystrophy. Amyloidosis. Mixed dystrophies.
3.	Circulatory disorders:	Venous congestion, bleeding, hemorrhages. DIC syndrome. Shock Stasis, thrombosis, embolism. Ischemia. Heart attack. Thromboembolic syndrome.
4.	Inflammation, immunopathology	Acute inflammation, morphology of exudative inflammation. Inflammatory mediators. Chronic inflammation. Granulomatosis, clinical and morphological characteristics. Regeneration. Reparations. Wound healing. Immunopathological processes: hypersensitivity reactions. Autoimmunity and autoimmune diseases. Immunopathological processes: Immunodeficiency conditions. AIDS. Amyloidosis
5.	Tumors	Pathology of cell growth and differentiation. Adaptation processes. Compensatory and adaptive reactions. Carcinogenesis, endogenous and exogenous blastogenic substances. Metastasis. Mechanisms of carcinogenesis. Classification and nomenclature. Morphology of organ-specific tumors: derivatives of epithelial tissue, mesenchyma. Tumors of the nervous, melanin-forming tissue. Pathology of blood cells and bone marrow. Hemoblastoses
6.	The cardiovascular system diseases	Introduction to nosology. Diagnosis: structure, types. <i>Diseases of the vascular system</i> . Atherosclerosis and arteriosclerosis. Hypertension. Vasculitis. General characteristics. Classification. Heart disease. Coronary heart disease (CHD). Hypertension. Acute and chronic heart disease. Heart diseases. Pathology of heart valves, myocardial diseases Rheumatic diseases. Classification. Rheumatism
Pathology of internal organs		
7.	Lung diseases	Acute pneumonia, destructive processes. Morphological characteristics. Bronchial asthma. Lung cancer
8.	Gastrointestinal diseases	Esophagitis, gastritis, stomach ulcer and duodenal ulcer. Stomach cancer. Enteritis, colitis, appendicitis. The large intestine cancer. Hepatitis, cirrhosis of the liver. Liver cancer.
9.	Pathomorphology of the urinary system	Glomerulonephritis. Amyloidosis of the kidneys. Acute renal failure, chronic renal failure.
10.	Pathomorphology of infectious diseases	Bacterial diseases: diphtheria, scarlet fever, meningococcal infection, sepsis, typhoid fever, dysentery, cholera, salmonellosis, plague, tularemia, brucellosis, anthrax. Diseases caused by protozoa, animal parasites and fungi. Syphilis. Tuberculosis. AIDS. Viral diseases and rickettsioses (polio, ARVI, measles, typhus).
11.	Diseases of the genital organs and mammary glands	Dishormonal and inflammatory diseases of the genital organs and mammary glands. Tumors of the genitals and mammary glands.
12.	Pregnancy diseases	Pathology of pregnancy, pathological anatomy.
Diseases of the endocrine system, skin, central nervous system		
13.	Diseases of the endocrine system	Diabetes mellitus
14.	Diseases of the bone and joint system	Osteopetrosis.
15.	Skin diseases	Dermatoses. Pigmentation disorder

3. Training support materials

- multimedia presentations on the discipline are available on MAU LMS Moodle;
- practical training manuals are available on MAU LMS Moodle;
- learning materials are available on MAU official website at [«Информация по образовательным программам, в том числе адаптированным»](#).

4. Discipline assessment materials

Discipline assessment materials is a separate document within the educational programme, it includes:

- a list of competencies indicating the stages of their achievement within the discipline;
- formative assessment tasks;
- interim assessment tasks;
- tasks for internal assessment of education quality.

5. The list of main and supplementary literature (printed, electronic and (or) electronic library resources)

Main literature:

1. Пауков В.С., Патологическая анатомия и патологическая физиология / В.С.

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- а 2. Пауков В.С., Патологическая анатомия. Т. 1. : учебник : в 2 т. / под ред. Паукова В.С. - М. : ГЭОТАР-Медиа, 2020. - 720 с. - ISBN 978-5-9704-5342-1 - Текст : электронный // ЭБС Консультант студента" : [сайт]. - URL:

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- в 3. Струков А. И. Патологическая анатомия : учебник для студентов учреждений высшего профессионального образования, обучающихся по специальности 31.05.01 "Лечебное дело" по дисциплинам "Патологическая анатомия", "Клиническая Патологическая анатомия" / под редакцией В. С. Паукова. – 6-е изд., перераб. и доп. – Москва : ГЭОТАР-Медиа, 2021. – 878 с. : ил. – Предм. указ.: с. 855-878. – ISBN 978-5-9704-6138-9[Гриф]. – Текст (визуальный) : непосредственный.

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Supplementary literature:

- и 4. Струков А.И., Патологическая анатомия : учебник / Струков А. И., Серов В. В. - М. : Литтерра, 2014. - 848 с. - ISBN 978-5-904090-26-5 - Текст : электронный // ЭБС "Консультант студента": [сайт]. - URL:

<https://www.studentlibrary.ru/book/ISBN9785904090265.html>

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6. Professional databases and information reference systems

- и 1) The state legal information system - the official website of legal information - URL:

<http://pravo.gov.ru>

- М 2) Information system "Single window of access to educational resources" - URL:

<http://window.edu.ru>

- Э 3) Jaypeedigital (<https://www.jaypeedigital.com/home>) – online-platform of medical resources from Jaypee Brothers Medical Publishers

Т Introduction to the platform (in English): https://disk.yandex.ru/i/K3Q61Zerp_x5Kw

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- 4) S Ebooks (Medical & Science) (<https://eduport-global.com/>) - electronic library of medical literature from CBS Publishers & Distributors Pvt. Ltd.
- 5) Legal reference system. Consultant Plus - URL: <http://www.consultant.ru/>
- 6) University Library Online <https://biblioclub.ru> (Access until May 29, 2025)
- 7) Electronic library system "Lan" <https://e.lanbook.com/> (Access until October 1, 2024)
- 8) Electronic library system "IPRsmart Digital Educational Resource" <http://iprbookshop.ru/> (Access from April 20, 2016, till April 19, 2024)
- 9) Electronic library system "Lan" – electronic library of licensed educational and professional literature e.lanbook.com

7. The list of licensed and openly distributed software, including domestic software

1. Microsoft Windows Vista Business Russian Academic OPEN operating system, license No. 44335756 dated 07/29/2008 (Agreement No.32/379 dated 07/14/08)
2. Microsoft Office 2007 Russian Academic OPEN Office Package, license No. 45676388 dated 07/08/2009 (Agreement 32/224 dated 07/14/2009)
3. Microsoft Office 2010 Russian Academic OPEN Office Package, license No. 47233444 dated 07/30/2010 (Agreement 32/285 dated July 27, 2010)
4. ABBYY FineReader Corporate 9.0 Optical text recognition system (network version), 2009 (Agreement LC-080000510 dated April 28, 2009)
5. Antivirus programme (contract No.7689 dated 07/23/2018 for the Dr.Web Desktop Security Suite Antivirus programme)

8. Ensuring mastering the discipline for people with special needs

Students with special needs are provided with printed and (or) electronic educational resources adapted to their needs.

9. The material and technical support of the discipline (module) is presented in the appendix to the academic programme "Material and technical conditions for the implementation of the educational programme" and includes:

- classrooms for conducting training sessions provided for by the specialty programme, fitted with technical equipment;
- spaces for self-study work fitted with computer equipment with the Internet connection and access to MAU LMS Moodle.

10. Study load distribution by type of educational activity

Table 1 - Study load distribution

Educational activity	The discipline (module) study load distribution by the forms of training			
	Full-time			
	Semester/year	Total hours	Semester/year	Total hours
	3/5		3/6	
Lectures	24	24	26	26
Seminars	40	40	40	40

Self-study work	8	8	6	6
Preparation for interim assessment	-		36	36
Total hours for the discipline	72	72	108	108
/ in the form of seminars	40	40	40	40
Interim and formative assessment				
Examination			+	

The list of seminars by the forms of education

№	Seminar topics		
1	2		
	Full-time		
	Topic	Theory	Practice
1	Introduction into anatomical pathology. Parenchymal dystrophy	Historical stages of the development of foreign anatomical pathology. Content, methods, tasks and place in medical science and healthcare practice. The connection of anatomical pathology with related disciplines. Parenchymal dystrophy as an expression of disorders of tissue / cellular / metabolism and as one of the forms of damage / alteration /.	Description of macropreparations, sketch of micropreparations with registration of the protocol.
2	Stromal vascular dystrophy	Causes, mechanism, morphology of stromal vascular dystrophy. Methods of detection, classification, morphological characteristics, manifestations and complications of protein, fat and carbohydrate stromal vascular dystrophy	Description of macropreparations, sketch of micropreparations with registration of the protocol.
3	Mixed dystrophies	Causes, pathogenesis of the metabolism of endogenous pigments, nucleoproteins, calcium and stone formation, their outcomes and significance. Disorders of hemoglobinogenic metabolism.	Description of macropreparations, sketch of micropreparations with registration of the protocol.
4	Necrosis, heart attacks, gangrene	Checking the theoretical knowledge of the section	Description of preparations
5	Circulatory disorders: venous and arterial fullness, hyperemia, stasis, bleeding	Types of blood filling disorders. Causes, mechanism of development, morphological manifestations of local and general anemia, outcomes and clinical significance of these conditions. Causes, manifestations and outcomes of local and general venous congestion, as a manifestation of acute and chronic heart failure. Signs of heart failure, causes, mechanisms of development, outcomes and the most common causes	Description of macropreparations, sketch of micropreparations with registration of the protocol.

		of death in these conditions. Morphology of acute and chronic heart failure. Local and general arterial congestion and anemia. Stasis	
6	Circulatory disorders: thrombosis, embolism	Morphology, causes, mechanism, types and outcomes of thrombosis. Embolism - definition, types, morphogenesis, meaning. Bleeding and hemorrhages, their types, outcomes and effect on the body. Types of bleeding and hemorrhages of the most important and frequent localizations, manifestations and complications of embolisms, thrombosis of various vascular systems of the body.	Description of macropreparations, sketch of micropreparations with registration of the protocol.
7	Inflammation. General questions. Alternative and exudative inflammation	The nature of the study of inflammations in the morphofunctional aspect. The relationship between the notions of local and general in the problem of inflammation. Etiology, pathogenesis and the main morphological and biochemical components of the inflammatory reaction, their regulatory and adaptive effect on the body. Clinical and morphological	Description of macropreparations, sketch of micropreparations with registration of the protocol.
8	Granulomatous inflammation: nonspecific and specific	Determination of granulomatous inflammation, its cellular composition and origin of the cells, etiological factors and the relationship of this type of inflammation with the immunocompetent system. Classification and characteristics of interstitial and granulomatous inflammation, types of granulomas.	Description of macropreparations, sketch of micropreparations with registration of the protocol.
9	Immunopathological processes	The definition of immunopathology, the main sections of this science, its relationship with immunomorphology and the doctrine of inflammation. Based on the knowledge of macro- and microscopic pictures of immunopathological processes, each student should be able to identify certain immunopathological processes and understand their effect on the body	Description of macropreparations, sketch of micropreparations with registration of the protocol.
10	Compensatory and adaptive processes	Classification of compensatory and adaptive processes, phases of their formation, causes, pathogenesis, types, morphology, significance and outcomes of regeneration and organization, encapsulation, hypertrophy, hyperplasia, metaplasia. Macroscopic manifestations and features of these processes. Regeneration: definition, types. Regeneration of various tissues and organs. Modern views on regeneration processes. Metaplasia: definition, types, effect on the body.	Description of macropreparations, sketch of micropreparations with registration of the protocol.
11	Organ-specific tumors from the epithelium	Classification of organ-specific benign and malignant tumors from the epithelium, macro- and microscopic features, precancerous conditions for this group of	Description of macropreparations, sketch of micropreparations with

		neoplasms. Morphological characteristics of tumors of the stomach, lungs, uterus, mammary glands, ovaries, kidneys, and skin. The main morphological manifestations, ways of metastasis of the stage of cancer of the stomach, ovaries, uterus, kidneys, mammary glands and lungs.	registration of the protocol.
12	Mesenchymal tumors. Tumors from nervous and melanin-forming tissue	Tumors from tissues of mesenchymal origin, their classification and the main types. Morphological characteristics of tumors of connective tissue, vascular, muscular, osteoarticular and mesothelial origin. Classification and features of tumors of the nervous system and brain membranes. Tumors from melanin-forming tissue – nevi and melanoma.	Description of macropreparations, sketch of micropreparations with registration of the protocol.
13	Blood system diseases	Classification of diseases of the blood system. The main types of anemia and hemoblastosis. Macro- and microscopic characteristics of diseases. Anemia: post-hemorrhagic, or hemolytic due to circulatory disorders and increased blood loss. Hemoblastosis. Modern classification, principles of its construction, age characteristics. Systemic hemoblastoses /leukemias/, their main syndromes. Malignant lymphomas. Lymphogranulomatosis, forms, morphological manifestations.	Description of macropreparations, sketch of micropreparations with registration of the protocol.
14	Atherosclerosis. Hypertension. Coronary heart disease	Etiopathogenesis of atherosclerosis and coronary heart disease, their connection. Definition of atherosclerosis. Etiology and pathogenesis. Stages and complications. Clinical and morphological forms. Heart damage in atherosclerosis: myocardial infarction, cardiosclerosis. Brain and kidney damage in atherosclerosis. Outcomes and causes of death. Theories of etiopathogenesis of hypertension, stages of hypertension, vascular lesions, changes in the brain, heart, kidneys in hypertension	Description of macropreparations, sketch of micropreparations with registration of the protocol.
15	Rheumatic diseases. Heart defects	General characteristics of collagen diseases, their varieties: rheumatism, rheumatoid arthritis, systemic lupus erythematosus, scleroderma, dermatomyositis, Sjogren disease, Ankylosing Spondylitis. Rheumatism - etiology, pathogenesis, localization of the main changes in rheumatism. Heart damage - endocarditis, myocarditis. Heart defects: their types. Morphological changes in the body during stagnation in the large and small circulatory circles. Hemodynamics and pathomorphology in various types of acquired heart defects.	Description of macropreparations, sketch of micropreparations with registration of the protocol.
16	Acute inflammatory lung diseases.	Pneumonia: etiology, types, classification. Lobar pneumonia, its morphology, stages,	Description of macropreparations,

	Acute pneumonia	complications. Lobular pneumonia. The difference between lobular and lobar pneumonia, outcomes of acute pneumonia. Acute bronchitis. Lung abscess.	sketch of micropreparations with registration of the protocol.
17	Chronic obstructive pulmonary diseases. Lung cancer	Etiology, pathogenesis, classification, pathoanatomy of chronic obstructive pulmonary diseases: chronic bronchitis, emphysema, bronchiectasis, bronchial asthma. Anthracosis, silicosis - morphological manifestations and stages. "Pulmonary heart disease" - causes of development, manifestations. Bronchial and lung cancer	Description of macropreparations, sketch of micropreparations with registration of the protocol.
18	Gastrointestinal diseases. Diseases of the esophagus, stomach, intestines	Causes, morphology, types of gastritis. Acute stomach ulcers. Gastric ulcer: causes, morphology, complications, outcomes. Stomach cancer. Intestinal diseases. Appendicitis - classification, etiology, pathogenesis. Complications of appendicitis.	Description of macropreparations, sketch of micropreparations with registration of the protocol.
19	Gastrointestinal diseases. Diseases of the liver, gallbladder, pancreas	Classification of liver diseases. Basic information about the etiology, pathogenesis, classification, pathoanatomy of acute hepatic necrosis, hepatic steatosis, hepatitis of various etiologies, cirrhosis of the liver. Hepatoses, hereditary and acquired. Liver cancer. Cholecystitis. Pancreatitis. Peritonitis.	Description of macropreparations, sketch of micropreparations with registration of the protocol.
20	Kidney diseases	Classifications of nephropathies, basic information about the etiology, pathogenesis, and anatomical pathology of glomerulopathies. Glomerulonephritis - types, macro- and microscopic characteristics. Nephrotic syndrome, classification, manifestations. Amyloidosis of the kidneys, etiopathogenesis. Morphology of the acute renal failure. Pyelonephritis. Nephrolithiasis. Nephrosclerosis. Anatomical pathology, outcomes and causes of death	Description of macropreparations, sketch of micropreparations with registration of the protocol.
21	The endocrine system diseases	Diseases of the pituitary gland, adrenal glands and gonads. Diseases of the thyroid gland. Goiter: classification by macro- and microscopic picture. Sporadic and endemic goiter. Graves' disease - definition, changes in internal organs. Diabetes mellitus. Diseases of the pituitary gland and adrenal glands.	Description of macropreparations, sketch of micropreparations with registration of the protocol.
22	Dishormonal and inflammatory diseases of the genital organs. Diseases of pregnancy and the postpartum period	Diseases of pregnancy and the postpartum period. Toxicosis of pregnancy. Ectopic pregnancy. Acute and chronic endometritis. Causes, morphology, outcomes, macro- and microscopic picture of the main dishormonal and tumor diseases of the genitals. Molar pregnancy, placental polyp, uterine cancer, fibroadenoma and mastopathy of the mammary glands, prostatic hypertrophy.	Description of macropreparations, sketch of micropreparations with registration of the protocol.
23	Infectious diseases. Intestinal infections.	Dysentery: etiology, pathomorphology, complications. Typhoid fever: etiology,	Description of macropreparations,

	Sepsis Meningococcal infection	stages of morphological changes. Meningococcal infection: etiology, changes in the central nervous system. Sepsis - causes, mechanism, types. Organ damage in sepsis. Septic endocarditis.	sketch of micropreparations with registration of the protocol.
24	Airborne infections. Diphtheria. Scarlet fever. Measles. Flu. Whooping cough	Basic information about the pathogens, sources and routes of infection, pathogenesis, anatomical pathology of childhood infections and airborne infections. Outcomes, complications and causes of death in infections: measles, diphtheria, scarlet fever, chickenpox, whooping cough	Description of macropreparations, sketch of micropreparations with registration of the protocol.
25	Tuberculosis	Tuberculosis - etiology, classification. Forms of primary tuberculosis, their morphological manifestations. Hematogenous tuberculosis, its forms. Types of secondary tuberculosis and their features.	Description of macropreparations, sketch of micropreparations with registration of the protocol.
26	Syphilis	Basic information about the pathogen, pathogenesis, anatomical pathology, and general patterns of inflammation in syphilis. The anatomical pathology of the various stages of syphilis and the causes of death in this disease. Macroscopic changes in organs and tissues, morphology of the most important complications in them.	Description of macropreparations, sketch of micropreparations with registration of the protocol.