



CD 8.5.1 DISCIPLINE CURRICULUM

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FACULTY OF MEDICINE STUDY PROGRAM MEDICINE DEPARTMENT OF MORPHOPATHOLOGY

APPROVED

at the meeting of the Commission for Quality Assurance and Evaluation of the Curriculum
Faculty of Medicine
Minutes No. ___ of _____

Chairman _____
(academic degree, scientific title)

Suman Serghei _____
(signature)

APPROVED

at the Council meeting of the Faculty of Medicine II
Minutes No. ___ of _____

Dean of Faculty _____

(academic degree,
scientific title)

Plăcintă Gheorghe _____
(signature)

APPROVED

approved at the meeting of the Department of Morphopathology
Minutes No. ___ of _____

Head of chair PhD, associate professor
(academic degree, scientific title)

Eugen Melnic _____
(signature)

SYLLABUS

DISCIPLINE MORPHOPATHOLOGY

Integrated studies

Type of course: **Mandatory discipline**

Chisinau, 2018



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I. PRELIMINATIONS

- **General presentation of the discipline: place and role of the discipline in the formation of the specific competences of the professional / specialty training program.**

The morphopathology course is an important component of preclinical and clinical education, the main objective is to study the material substrate of the disease, forming the subject of nozology. Expects to know the necessary aetiology and pathogenesis to understand the essence of the theoretical and practical bases of medicine, for a more in-depth study of the clinical and morphological manifestations of the disease and the use of this knowledge in the physician's daily practice.

Morphopathology is a discipline studied at the 3rd year of Faculty of Medicine, whose analytical program correlates with a large number of preclinical disciplines (anatomy, embryology, histology, cell and molecular biology, pathophysiology), and clinical (cardiology, surgery, internal medicine, gynecology, neurology, dermatology, etc.). It includes the notions needed to understand the disease lesion substrate, thus linking the fundamental knowledge and medical practice. To this end, it aims at acquiring knowledge of general pathology on fundamental processes at different structural levels; the acquisition of some notions of systemic pathology related to the morphological changes in different diseases at the level of the systems, indispensable for the understanding of the production mechanism and their manifestations.

Mission of the curriculum (aim) in professional training

Unul din obiectivele principale ale cursului este fundamentarea cunoștințelor de anatomie patologică generală și specială necesare înțelegerii proceselor patologice în concordanță cu etiologia, mecanismele de producere a bolilor și însușirea aspectelor macroscopice și microscopice ale diferitelor categorii de leziuni. Knowledge and understanding the way of producing, developing and complete injuries. Defining and identifying lesions according to macroscopic and histopathological aspects. Understanding the need to recognize injuries in the general context of the disease. Learning the technique of macroscopic and histopathological examination of organs and tissues.

Knowledge obtained from a study of pathology will be included with other courses to provide methods of assessment and diagnosis of patients.

Language (s) of the course: Romanian, Russian, English;

- **Beneficiaries:** students of the IIIrd year, faculty of medicine I, Medicine specialty

II. MANAGEMENT OF THE DISCIPLINE

Code of discipline		F.02.O.002	
Name of the discipline		Morfopathology	
Person(s) in charge of the discipline		dr. șt. med., conf. univ. Eugen Melnic	
Year	III	Semester/Semesters	V,VI
Total number of hours, including:			300
Lectures	34/34	Practical work	25/25
Seminars	26/26	Self-training	65/65
Form of assessment	C/E	Number of credits	5/5



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III. TRAINING AIMS WITHIN THE DISCIPLINE

✓ *At the level of knowledge and understanding*

- Acquiring a specific language of pathological anatomy, needed in dialogue with representatives of various medical specialties.
- Correlation of these notions with those presented in other clinical or preclinical disciplines.
- Correlation of clinical manifestations of diseases with macroscopic and microscopic changes.
- Formulation of a suitable differential diagnosis of lesions present in a given patient.
- Establishing the role of the anatomopathological examination in establishing the diagnosis.
- Establishing a correct diagnosis with clinical and anatomopathological data.
- Knowledge of the main lesions from anatomopathological point of view and understanding of the main histological changes as well as the mechanisms of their production.

✓ *At the level of application:*

- To properly use disease-specific terminology.
- Be able to describe and comment from the anatomo-pathological point of view the diseases studied in the clinic.
- To be able to interpret a histopathological analysis bulletin.
- To sensitize future clinicians for the decisive importance of histopathological diagnosis for medical practice.

✓ *At the level of integration:*

- Be able to evaluate the place and role of morphopathology in the preclinical training of the medical student.
- Be competent to use the knowledge and methodology of pathological anatomy in the ability to explain the nature of pathological processes;
- Be able to make a connection between structure and function at molecular → cellular → tissue → organ level.
- Be able to deduce the possible causes of the suffering of the pathological processes and their consequences on the cell, the tissue, the body as a whole.
- Be able to implement the knowledge gained in the work of a researcher.
- Be competent to use critical and reliable scientific information obtained using the new information and communication technologies.
- Be able to use multimedia technology to receive, evaluate, store, produce, present and exchange information, and communicate and participate in networks via the internet.
- Being able to learn, which will contribute to the management of the professional route.

IV. PRELIMINARY CONDITIONS AND REQUIREMENTS

Student of the 3rd year requires the following:

- knowledge of the language of teaching;
- competences confirmed in the disciplines of previous years of studies;
- digital competences (use of the Internet, document processing, electronic tables and presentations, use of graphics programs);
- ability to communicate and team work;
- qualities - tolerance, compassion, autonomy.



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V. THEMES AND ESTIMATE ALLOCATION OF HOURS

A. Courses (lectures):

Nr. d/o	Theme	Hours
1.	Reversible cell lesions. The process of cellular injury, the morphology of reversible cell lesions. Intracellular accumulations due to metabolic disorders: lipids, proteins, glycogen, pigments. Hyalinosis. Pathological calcification.	2
2.	Irreversible cell lesions. The process of cellular injury, the morphology of irreversible cellular lesions. Necrosis and apoptosis. Cellular organisms response to cellular damage.	2
3.	Adaptation and compensatory processes. Regeneration of tissues. Cellular adaptive responses of growth and differentiation: atrophy, hypertrophy, hyperplasia, metaplasia. Aspects of cell growth (regeneration). Connective tissue repair (angiogenesis, fibrosis). Wound healing.	2
4.	Blood and lymphatic circulation disorders. Morphological changes in edema, hyperaemia and congestion. Hemorrhage. Thrombosis. Embolism: pulmonary and systemic thromboembolism, lipid embolism, amniotic fluid embolism, gastric embolism. Acute and chronic ischemia. Infarction - Infarct Types. Morphological damage to the shock.	2
5.	Inflammation. Acute inflammation: changes in acute inflammatory focus, Classification of exudative inflammation. Serous, fibrinous, suppurative inflammation. Possibilities of evolution of acute inflammation. Abscess and phlegmon, septicemia, and septic-piems. Chronic inflammation. Cellular changes in chronic non-specific inflammation. Granulomatous inflammation. General and classification. Tuberculosis, syphilis, leprosy, cat claw disease, toxoplasmosis, granulomatous foreign body reaction, sarcoidosis.	2
6.	Immuno-pathological processes. Hypersensitivity reactions. Morphological changes in diseases caused by hypersensitivity. Transplant rejection.	2
7.	Autoimmune diseases. SLE, Sjögren's syndrome, systemic sclerosis, rheumatoid arthritis, primary and secondary immune deficiency syndromes. Amyloidosis.	2
8.	Tumors: General Aspects. Nomenclature. The general characters of benign and malignant neoplasms. Carcinogenesis. Biology of tumor development. Tumor angiogenesis. Clinical-pathological changes in tumors. Grading and staging of malignant neoplasms. Morphological diagnosis in cancer.	2
9.	Tumors of soft tissues. Non-neoplastic skin diseases, non-melanocytic skin tumors, melanocytic lesions, soft tissue tumors.	2
10.	Introduction to Special Pathology. The notion of disease and diagnosis. The primary, secondary disease	2
11.	Hematogenous bone pathology: morphology of anemia, polycythemia. Leukemias and myeloproliferative diseases: acute leukemias, chronic myeloid leukemia. Pathology of lymph nodes: acute and chronic nonspecific lymphadenitis. Lymphoid tumor proliferation: lymphomas and leukemias of lymphocyte B, lymphomas and leukemias of T and NK lymphocytes, Hodgkin's lymphoma. Spleen pathology: the morphological substrate of splenomegaly. Thyroid pathology: thymic hyperplasia, thymoma.	2



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12.	Pathology of arteries: Atherosclerosis. Vascular morphological changes in arterial hypertension. Vasculitis: giant cell arteritis, Takayas arteritis, nodular polyarteritis. Aneurysms: classification, types of aneurysms. Aortic Dissection. Vein pathology: thrombophlebitis, phlebotromboze. Varicose veins. Pathology of therapeutic interventions in vascular diseases.	2
13.	Heart lesions: acute and chronic ischemic heart disease. Changes in heart rate in systemic arterial hypertension. Valvulopathy: Valvular degenerative changes (mixomatous degeneration of mitral valve, mitral valve prolapse). Calcified aortic stenosis, calcification of the mitral valve ring. Acute and Chronic Rheumatic fever. Endocarditis. Primary cardiomyopathies (dilatation, hypertrophy, restrictive) and secondary. Myocarditis. Pathology of the pericardium: pathological pericardial fluids. Congenital angiocardioopathies. Heart failure	2
14.	Pathology of the respiratory tract: rhinopharyngeal, laryngitis, tracheitis and bronchitis. Respiratory distress syndrome in adults and children. Atelectasis. Pulmonary infections: Lobular pneumonia. Bronchopneumonia. Interstitial pneumonia (primary atypical pneumonia). Suction bronchopneumonia. Pulmonary abscesses.	2
15.	Chronic pulmonary pathology: Obstructive chronic bronchopneumopathy. bronchial asthma, pulmonary emphysema, chronic bronchitis, bronchiectasis. Broncho-pulmonary tumors: bronchogenic carcinoma, paraneoplastic syndromes, bronchiolo-alveolar carcinoma, neuroendocrine tumors, pulmonary metastases. Pleural pathology: Inflammatory pleural effusions and accumulation of pathological fluids in the pleural cavity. Pneumothorax. Primary and secondary pleural tumors.	2
16.	Primary, secondary, progressive tuberculosis. Extrapulmonary tuberculosis.	2
17.	GENETIC DISEASES: Diseases associated with defects in structural proteins: Marfan syndrome, Ehlers-Danlos syndrome. Diseases associated with defects in receptor proteins: familial hypercholesterolemia. Diseases associated with enzyme defects: lysosomal storage disease, Gaucher disease, Niemann-Pick type A and B disease, Tay-Sachs disease, mucopolysaccharidosis, glycogenesis	2
18.	Higher digestive system pathology: Diseases of the esophagus: malformations, esophagitis, stenosis-dilatation, tumors. Stomach diseases: gastritis, gastro-duodenal ulceration, gastric mucosal hyperplasia, benign and malignant tumors of the stomach, congenital malformations.	2
19.	Intestinal pathology: circulatory disorders, lumen changes (megacolon, diverticuli), enterocolitis, inflammation of some intestinal segments (appendicitis, proctitis), specific inflammation (Crohn's disease, ulcerative colitis), benign and malignant tumors. Hernias, intestinal occlusion, peritoneal diseases. Intestinal infections: dysentery, salmonellosis, typhoid fever, cholera.	2
20.	Liver Pathology: Jaundice and cholestasis. Acute and chronic viral infectious hepatitis. Bacterial, parasitic and helminthic infections. Autoimmune hepatitis. Drug and Toxic Induced Hepatitis: Alcoholic Liver Disease. Non-alcoholic steatosis. Genetic errors in metabolism: hemochromatosis, Wilson's disease, alpha-1-antitrypsin deficiency, neonatal hepatitis. Hepatic cirrhosis. Portal hypertension. Benign and malignant tumors. Biliary pathology: Cholelithiasis. Acute and chronic cholangitis. Acute and chronic cholecystitis. Gallbladder and extra-hepatic biliary tract carcinoma. Pathology of exocrine pancreas: Cystic fibrosis. Acute and chronic pancreatitis. Benign and malignant tumors.	2



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21.	<p>Endocrine pathology: Pituitary gland pathology: adenomas.</p> <p>Thyroid gland pathology: hypothyroidism (cretinism, mixedem), hyperthyroidism (tyreotoxicosis), Basedow-Graves disease, acute and chronic thyroiditis, simple non-toxic diffuse goiter, multi-nodular goiter, benign and malignant tumors. Thyroid aspiration cytology.</p> <p>Parathyroid gland pathology: Primary and secondary hyperparathyroidism.</p> <p>Adrenal gland pathology: hyperadrenalism (Cushing's syndrome), primary hyperaldosteronism, adrenogenital syndrome, primary adrenocortical insufficiency (Waterhouse-Friderichsen syndrome), primary chronic failure (Addison's disease). Adrenocortical tumors.</p> <p>Medullo-adrenal pathology: pheochromocytoma, neuroblastoma, ganglioneuromull.</p> <p>Endocrine pancreatic pathology: morphological changes in type I and II diabetes mellitus. Tumors: insulinoma, gastrinoma.</p>	2
22.	<p>Pathology of urinary system and urinary tract:</p> <p>Congenital anomalies.</p> <p>Glomerular nephropathy: clinical syndromes: histological alterations; pathogenesis of glomerular lesions: deposition of circulating and in situ, anti-glomerular basal membrane nephritis, complement activation. Acute diffuse proliferative glomerulonephritis postinfectious. Fast progressive glomerulonephritis (with semilunas). Membranous glomerulonephritis. Disease with minimal changes (lipoid nephrosis). Glomerular lesions in systemic diseases.</p> <p>Tubulo-interstitial nephropathy: acute tubular necrosis; tubulo-interstitial nephritis: acute, chronic pyelonephritis, reflux nephropathy, drug and toxins-induced tubulo-interstitial nephritis. Vascular nephropathies: benign and malignant nephroangiosclerosis; stenosis of the renal artery.</p> <p>Urinary tract obstruction (obstructive uropathy). Renal tumors.</p> <p>Bladder and urinary tract pathology: congenital abnormalities, inflammation, benign and malignant tumors.</p>	2
23.	<p>Pathology of the male genital system. Testicular and epididym diseases: malformations, inflammations, tumors. The deferent duct and spermatic cord diseases. Prostate pathology: prostatitis, nodular hyperplasia, prostate carcinoma. Pathology of external genitalia. Disorders of sexual differentiation. Syphilis.</p>	2
24.	<p>Pathology of the female genital system. Morphological investigation methods.</p> <p>Uterine cervix pathology: cervicovaginal cytology, cervicitis, endocervical polyps, intraepithelial cervical neoplasia, squamous cell carcinoma. Pathology of the uterine body: endometriosis, adenomyosis, endometritis, dishormonal lesions, benign and malignant tumors. Pathology of fallopian tube's: acute and chronic inflammation, tumors. Ovarian pathology: inflammation, polycystic ovary, pseudotumor and tumors. Pathology of pregnancy: placental inflammation, ectopic pregnancy, gestational trophoblastic disease.</p>	2
25.	<p>Pathology of pregnancy and post-partum: Pathology of pregnancy and neonatal: abortion, extrauterine pregnancy, toxicosis, placental and fetal membrane pathology, complications of birth and post-partum. Neonatal obstetrical traumas, newborn asphyxia, intrauterine death of the fetus, newborn infections. Pathology of the mammary gland: developmental disorders, inflammation. Fibro-cystic mastopathy. Mammary carcinoma: classification, histological types, prognostic factor. Stromal tumors: fibroadenoma, fibroid tumor and sarcoma. Methods of morphological diagnosis of mammary carcinoma. Gynecomastia.</p>	2



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26.	Pre- and perinatal pathology: pathologies of progeny and kimatogenesis. Congenital abnormalities, birth injuries, newborn illnesses, innate errors in metabolism, tumors.	4
27.	Pathology of CNS: Meningitis: bleeding, meningitis. Hydrocephalus, internal hemocephaly. Brain diseases: Hypertensive encephalopathy - circulatory disorders (infarction, haemorrhage, anoxic encephalopathy) Peripheral nerve pathology. Infections: Acute bacterial and viral meningitis. Acute suppurated infections: cerebral abscess, subdural empyema, extradural abscesses. Chronic bacterial meningoencephalitis: tuberculosis, neurosyphilis. Primary and secondary tumors.	4
28.	Pathology of the osteoarticular system. Bone pathology: Diseases associated with abnormal matrix: osteoporosis. Diseases associated with deficiencies of mineral homeostasis: rickets and osteomalacia. Fracture. Infections: Piogene osteomyelitis, bone tuberculosis. Bone diseases: congenital disorders of osteogenesis, non-inflammatory lesions, periostit, nonspecific and specific osteomyelitis, bone tumors. Joint diseases: degenerative lesions (arthrosis), nonspecific and specific inflammation, joint tumors. Tendovaginitis, bursitis.	2
29.	Pathology of skin and soft tissues. Non-neoplastic skin diseases. Benign and malignant tumors of the skin. Pigmentation disorders. Benign and malignant tumors of the melanocytic system: melanocytic nevi, dysplastic nevi, malignant melanoma. Denervation Atrophy. Muscular dystrophies: Duchenne disease, Becker's disease, myotonic dystrophy. Inflammatory myopathies, toxic myopathies. Diseases of neuromuscular junction: myasthenia gravis.	2
30.	Sepsis: forms of sepsis, etiological classification. Sepsis. Sepsis sever. Toxic-septic shock. Morphological features and clinical correlations. Complications and causes of death.	2
31.	Iatrogenic pathology: Definition and classification of iatrogenesis. Iatrogenie or Medical Error? Contemporary vision of iatrogens. The main directions for solving the problems of iatrogenie.	2
32.	The notion of cytopathology. Its importance in screening programs. The role of cytopathology in the prevention of malignant neoplasms and their detection at early stages of evolution.	2
Total		68



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B. Seminars / Practical lectures:

Nr. d/r	Theme	Hours		
		S	LP	L/I
1.	Introduction to morphopathology, notions about disease, diagnosis, etiology, pathogenesis, CIM, diagnostic errors, cytopathology.	1.5	1.5	3
2.	Reversible intra- and extracellular lesions (accumulations). Etiology of metabolic disorders, their classification. Hydroproteic dystrophies, protein dystrophies (pathological keratinization, cellular and extracellular hyalinosis), metabolic diseases of some amino acids, glucose dystrophies (glycogenesis, mucopolysaccharidosis, fructose intolerance, galactose, mucinous dystrophy) <u>Specimens to be studied:</u> Liver fatty dystrophy (liver steatosis). Heart lipomatosis Hydropic (vacuolar) dystrophy of the epithelium of convoluted renal tubes Hyalinosis in uterine leiomyoma Hyalinosis of the heart valves (rheumatic mitral valve)	1.5	1.5	3
3.	Endogenous and exogenous pigments. Pathological calcinosis. <u>Specimens to be studied:</u> Hemosiderosis of the kidney Liver in mechanical jaundice Metastatic calcinosis of the myocardium Amyloidosis of the kidney Calculi in the gall bladder Renal calculi	1.5	1.5	3
4.	Irreversible tissue / cellular lesions: necrosis, apoptosis. Death, signs of death, post mortem changes <u>Specimens to be studied:</u> Necrosis of the epithelium of renal convoluted tubes. Lienal infarction Caseous necrosis of the lymph node in tuberculosis Pancreonecrosis. Dry gangrene of the hand (foot). Caseous necrosis in tuberculosis (caseous pneumonia). Postinfarctional scarring in myocardium (macrofocal cardiosclerosis AMI).	1.5	1.5	3
5.	Compensatory adaptive processes <u>Specimens to be studied:</u> Granulation tissue Myocardial compensatory hypertrophy. Glando-cystic hyperplasia of the endometrium. Post-infarction cardiosclerosis. Left ventricular hypertrophy of the heart. Right ventricular hypertrophy of the heart. Hypertrophy of the bladder wall in the prostate adenoma Brown heart atrophy Ovarian atrophy.	1.5	1.5	3



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	Hydronephrosis Hydrocephaly			
6.	<p>Circulatory disorders (I): hyperemia, congestion, ischemia, infarction, stasis</p> <p><u>Specimens to be studied:</u></p> <ul style="list-style-type: none"> Congestive hyperemia liver (nutmeg liver). Congestive hyperemia of the lung (brown induration of the lung). Hemorrhagic lung disease. Renal infarction. Nutmeg liver. Ischemic lienal infarction. Myocardial infarction. 	1.5	1.5	3
7.	<p>Circulatory disorders (II): thrombosis, embolism, haemorrhage, edema, shock, lymphatic circulation disorders.</p> <p><u>Specimens to be studied:</u></p> <ul style="list-style-type: none"> Recently red trombus in the vein. Cellular (cancerous) embolus of pulmonary lymphatic vessels. The microbial embolus of the renal vessels. Diapedesis hemorrhage in the brain. Parietal thrombosis of aorta. Thromboembolism of pulmonary artery. Cancer metastases in the lung. Purulent embolic nephritis (metastatic abscess into the kidney). Cerebral haemorrhage (parenchymatous hematoma). 	1.5	1.5	3
8.	TEST nr.1: topics 1, 2, 3, 4, 5, 6, 7	1.5		7
9.	<p>Acute and chronic inflammation. Forms of inflammation: Alterative inflammation, exudative inflammation (serous, fibrinous, purulent, putrid, haemorrhagic), productive inflammation: nonspecific (reparative-regenerative processes), foreign body granuloma, specific inflammation.</p> <p><u>Specimens to be studied:</u></p> <ul style="list-style-type: none"> Pyogenic leptomeningitis. Interstitial myocarditis. Renal miliary tuberculosis. Fibrinous pericarditis (villus cord). Abcedant bronchopneumonia. Lobar franc pneumonia (gray hepatitis). Fibrinous pleuritis. Fibrinous peritonitis. Diffuse cardiosclerosis. Echinococcus into heart. 	1.5	1.5	3
10.	<p>Immunopathological processes: hypersensitivity reactions, congenital and acquired immunodeficiencies, AIDS</p> <p><u>Specimens to be studied:</u></p> <ul style="list-style-type: none"> Accidental thymus involution. Thymus hypoplasia in Di-George cellular immunodeficiency syndrome Hyperplasia of lymphoid lienal follicles in antigenic stimulation Hypoplasia of follicular follicles in immunodeficiency syndrome Allergic nasal polyps (allergic rhinitis) 	1.5	1.5	3



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11.	<p>Autoimmune diseases: LES, rheumatoid arthritis, systemic sclerosis, dermatomyositis, nodular polyarteritis, Sjogren's syndrome, amyloidosis</p> <p><u>Specimens to be studied:</u> Autoimmune thyroiditis Autoimmune Sialoadenitis Nodular poliararteritis Amyloidosis of the spleen (sago spleen) Amyloidosis of the liver</p>	1.5	1.5	3
12.	<p>Tumors, generalities. Anatomico-clinic classification. Macroscopic, histological and cytological features, tumor growth and propagation, metastasis, and recurrence. Histogenetic classification of tumors: epithelial, mesenchymal, melanocytic tumors, embryonic and germinal tumors, nerve tissue tumors and envelopes, diffuse neuroendocrine system tumors.</p> <p><u>Specimens to be studied:</u> Papilloma of skin. Squamous carcinoma with cornification. Adenocarcinoma of the colon. Metastasis of glandular carcinoma in the liver. Centro-hilar pulmonary carcinoma. Laryngeal carcinoma. Gastric carcinoma. Metastases of carcinoma in the liver. Carcinoma metastases in the lungs. Esophageal carcinoma.</p>	1.5	1.5	3
13.	<p>Benign and malignant tumors of soft tissues. Principles of classification, growth and metastasis.</p> <p><u>Specimens to be studied:</u> Uterine fibroleiomioma. Cavernous hemangioma of the liver. Fibrosarcoma. Metastasis of melanoma in the kidneys Mixoma of the heart. Metastases of melanoma in the liver.</p>	1.5	1.5	3
14.	<p>Pathology of the hematopoietic system: Blood pathology: anemia, polycythemia, leucocytosis, acute and chronic leukemia, thrombocytopenia, thrombocytopenia, haemorrhagic diatheses. Bone marrow pathology: osteomedullar insufficiency, myeloproliferative syndromes. Non-tumoral lymph node pathology. Pathology of the spleen.</p> <p><u>Specimens to be studied:</u> Liver in chronic lymphoid leukosis. Plasmacytoma. Lymph node in Hodgkin's lymphoma. Bone marrow in leucosis Kidneys in leucosis. The spleen in chronic myeloid leukosis. Mesenterial lymph nodes in chronic lymphoid leukosis. Lymph nodes in Hodgkin's lymphoma. Porphyric spleen in Hodgkin's lymphoma.</p>	1.5	1.5	3



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15.	TEST nr. 2: (topics 9, 10, 11, 12, 13, 14)	1.5		7
16.	<p>Artery disease: arteriosclerosis, hypertension, aneurysms, arteritis, Raynaud's syndrome. Venous diseases: Varicose, phlebitis, thrombophlebitis.</p> <p>Diseases of capillaries and lymph vessels</p> <p><u>Specimens to be studied:</u></p> <p>Coronary artery thrombosis.</p> <p>Microfocal cardiosclerotic atherosclerosis.</p> <p>Arteriosclerotic nephrosclerosis.</p> <p>Atherosclerosis of the aorta (parietal thrombosis).</p> <p>Aortic aneurysma.</p> <p>Intra-cerebral haemorrhage (hematoma).</p> <p>Myocardial infarction</p> <p>Chronic cardiac aneurysma with thrombosis.</p> <p>Wrinkled kidney.</p>	1.5	1.5	3
17.	<p>Pathology of the heart: Diseases of the pericardium. Myocardial diseases: ischemic heart disease (myocardial infarction, angina pectoris, chronic ischemic heart disease, sudden cardiac death), heart hypertrophy and dilation, cardiomyopathy, myocarditis. Endocardium diseases: endocarditis, valvulopathy. Heart failure.</p> <p><u>Specimens to be studied:</u></p> <p>Recent myocardial infarction.</p> <p>Myocardial infarction in course of organization.</p> <p>Rupture of the heart (left ventricle) in acute myocardial infarction.</p> <p>Macrofocal postinfarct cardiosclerosis.</p> <p>Chronic cardiac aneurysma with thrombosis.</p> <p>Intracardiac thrombosis.</p> <p>Fibrinous pericarditis.</p>	1.5	1.5	3
18.	<p>Acute Pulmonary Pathology: Atelectasia. Bronchitis, lobar pneumonia, bronchopneumonia. Airborne infections (flu, measles, diphtheria)</p> <p><u>Specimens to be studied:</u></p> <p>Franc lobar pneumonia (gray hepatisation).</p> <p>Bronchopneumonia (focal pneumonia).</p> <p>Abcedant bronchopneumonia.</p> <p>Acute necro-ulcerative bronchitis in the flu.</p> <p>Sero-hemorrhagic bronchopneumonia in the flu.</p> <p>Crupous diphtheric tracheitis.</p> <p>Confluent focal pneumonia.</p> <p>Fibrinous pleuritis.</p>	1.5	1.5	3
19.	<p>Chronic pulmonary pathology. Lung Cancer.</p> <p><u>Specimens to be studied:</u></p> <p>Chronic bronchitis</p> <p>Pulmonary emphysema</p> <p>Pulmonary keratinizing squamous cell carcinoma.</p>	1.5	1.5	3



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	<p>Metastases of undifferentiated pulmonary carcinoma into the heart</p> <p>Bronchiectasis with pneumosclerosis.</p> <p>Chronic diffuse pulmonary emphysema.</p> <p>Right ventricular hypertrophy of the heart (pulmonary cord).</p> <p>Central lung carcinoma (perihilar).</p> <p>Peripheral lung carcinoma.</p>			
20.	<p>Tuberculosis: pathogenesis and typical lesions in tuberculosis. Comparative morphological changes in different forms of tuberculosis. Primary, secondary and progressive tuberculosis. Complications of each type of tuberculosis.</p> <p><u>Specimens to be studied:</u></p> <p>Miliary lung's tuberculosis.</p> <p>Miliary liver's tuberculosis.</p> <p>Renal miliary tuberculosis.</p> <p>Caseous pneumonia.</p> <p>Fibro-cavitary lung tuberculosis.</p> <p>Tuberculosis of mediastinal lymphatic nodes.</p> <p>Tuberculous spondylitis.</p>	1.5	1.5	3
21.	<p>Pathology of tonsils, esophagus, stomach: Congenital anomalies, infections, inflammatory and vascular disorders. Tumors of the esophagus, stomach. Diseases of the peritoneum.</p> <p><u>Specimens to be studied:</u></p> <p>Acute gastric ulcer.</p> <p>Chronic gastric ulcer in aggravation.</p> <p>Gastric adenocarcinoma.</p> <p>Metastases of gastric carcinoma into lymph node.</p> <p>Esophageal carcinoma.</p> <p>Gastric Polyp.</p> <p>Chronic gastric ulcer.</p> <p>Chronic gastric ulcer with perforation.</p> <p>Chronic duodenal ulcer.</p> <p>Gastric carcinoma.</p>	1.5	1.5	3
22.	<p>Intestinal pathology. Congenital anomalies, infections, inflammatory and vascular diseases, tumors of the small intestine, colon, appendix, and anal canal. Diseases of the peritoneum. Intestinal infections: typhoid fever, salmonellosis, cholera, dysentery.</p> <p><u>Specimens to be studied:</u></p> <p>Acute suppurative appendicitis.</p> <p>Chronic appendicitis.</p>	1.5	1.5	3



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	<p>Appendiceal mucocele.</p> <p>Mucinous carcinoma of the colon (signet-ring cell.</p> <p>Hyperplasia of mesenteric lymph node in typhoid fever.</p> <p>Pseudomembranous colitis.</p> <p>Acute ulcero-phlegmonous appendicitis with periappendicitis.</p> <p>Carcinoma of sigmoid colon.</p> <p>Encephaloid modifications of Payer patches in typhoid fever.</p> <p>Ulcerο-fibrous colitis in dysentery.</p>			
23.	TEST nr. 3; Topics 16,17,18,19,20,21,22	1.5		7
24.	<p>Pathology of liver and gall bladder: Viral and non-viral hepatitis, morphological changes. Jaundice: Etiology, morphological changes and consequences. Hepatic cirrhosis: classification, morphology, consequences. Portal hypertension. Liver and gallbladder ducts tumors.</p> <p><u>Specimens to be studied:</u></p> <p>Acute toxic dystrophy of the liver.</p> <p>Viral hepatitis, acute cyclic form.</p> <p>Liver micronodular cirrhosis.</p> <p>Hepatocellular carcinoma on the background of liver cirrhosis.</p> <p>Acute massive necrosis of liver (toxic dystrophy).</p> <p>Cancer metastasis into liver.</p> <p>Gallstones in the gallbladder.</p>	1.5	1.5	3
25.	<p>Pathology of the kidneys and urinary tract: Congenital abnormalities of the kidneys and urinary tract. Classification of kidney disorders, kidney syndromes and their manifestations. Diseases that affect glomeruli, tubules, interstitium, and blood vessels. Renal tumors</p> <p><u>Specimens to be studied:</u></p> <p>Rapidly progressive (crescentic) glomerulonephritis.</p> <p>Chronic glomerulonephritis.</p> <p>Chronic pyelonephritis.</p> <p>Clear Cell Nephrocellular Carcinoma (Hypernephroid) (H-E stain).</p> <p>Acute glomerulonephritis.</p> <p>Renal amyloidosis.</p> <p>Wrinkled kidney.</p> <p>Renal stones.</p> <p>Hydronephrosis.</p> <p>Renal polychistosis.</p> <p>Renal carcinoma.</p> <p>Bladder carcinoma.</p>	1.5	1.5	3
26.	Endocrine system pathology and nutritional diseases (obesity): Normal	1.5	1.5	3



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	<p>hormonal levels and functions of all endocrine glands. Hypo and hyperactivity of endocrine system glands: pituitary, thyroid, parathyroid, pancreas, adrenal glands and pineal gland. Autoimmune diseases, inflammations and tumors affecting these glands.</p> <p><u>Specimens to be studied:</u> Colloidal goiter. Thyrotoxic goiter (Grave's disease) Chromophob adenoma of hypophysis. Diabetic (nodular) glomerulosclerosis Diffuse goiter. Adrenal gland adenoma.</p>			
27.	<p>Male genital pathology: Congenital anomalies, inflammations and tumors of the ureter, urethra, penis, testicular and epididymal. Inflammation, hyperplasia and prostate tumors. Sexually transmitted infections, syphilis.</p> <p><u>Specimens to be studied:</u> Gynecomastia. Prostatic adenocarcinoma on benign prostatic hyperplasia background Testicular seminoma. Syphilitic mesaortitis. Glandular prostatic hyperplasia with urinary bladder wall hypertrophy. Syphilitic aortic aneurysm.</p>	1.5	1.5	3
28.	<p>Pathology of the female genital system, including obstetrical pathology and post-partum period: Embryology, anatomy, physiology and histology of the female genital tract. Congenital anomalies, inflammations and tumors of the vulva, vagina, cervix, uterus, fallopian tubes and ovaries. Gestational and placental disorders. Breast inflammation, benign epithelial lesions and breast tumors.</p> <p><u>Specimens to be studied:</u> Simple endometrial hyperplasia. Fibro-cystic mastopathy Purulent salpingitis. Endometritis. Endometrial polyp. Uterine body carcinoma. Cervical carcinoma. Chronic salpingitis. Ovarian chistadenoma. Ovarian dermoid cyst. Ovarian carcinoma. Mammary carcinoma.</p>	1.5	1.5	3
29.	<p>Perinatal pathology: Congenital vices: classification, morphological peculiarities and clinical impact. Placental pathology: formation, insertion, detachment.</p> <p><u>Specimens to be studied:</u> Cytomegalic metamorphosis of the epithelium of the renal tubules Cystic fibrosis of the pancreas in mucoviscidosis</p>	1.5	1.5	3



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	<p>Cerebral tissue lesions in toxoplasmosis Hyaline membranes in the lungs Congenital heart disease: defect of interventricular septum. Polycystosis of the liver. Renal polychistosis. Hydrocephalus. Congenital malformation: anencephaly. Congenital malformation: Cerebral hernia.</p>			
30.	<p>Central nervous system pathology: degenerative, metabolic, toxic, demyelinating, infectious, vascular, malformations and traumatic lesions. CNS and peripheral tumors. <u>Specimens to be studied:</u> Cerebral ischemic infarction (gray ramolishment). Multiform Glioblastoma Fibroblastic meningioma Brain melanoma metastases . Cerebral hematoma Cerebral tumor (glioblastoma) Hydrocephalus Purulent leptomeningitis.</p>	1.5	1.5	3
31.	<p>TEST nr. 4 Topics: 24,25,26,27,28,29,30</p>	1.5		7
32.	<p>Pathology of the musculoskeletal and skin system: Bones: modeling, growth and development, genetic and acquired anomalies. Septic and aseptic necrosis. Tumors and pseudotumoral bone processes. Joints: arthritis, tumors and pseudotumoral lesions. Soft tissues: infectious and tumoral processes. Skin: Pigmentation disorders. Skin infections and systemic pathologies with cutaneous manifestations. Skin tumors and pseudotumoidal processes. <u>Specimens to be studied:</u> Capillary hemangioma. Fibrosarcoma. osteosarcoma Osteoid osteoma, chondrosarcoma Basal cell carcinoma. Skin hyperkeratosis. Melanoma metastases in the liver. Cutaneous papilloma.</p>	1.5	1.5	3
33.	<p>Sepsis. Pathogenesis and typical lesions for sepsis. Septicopiemie. <u>Specimens to be studied:</u> Embolic purulent myocarditis Pulmonary embolic nephritis Purulent embolic encephalitis Polypotic ulcerativ endocarditis of the aortic valve. Purulent embolic nephritis.</p>	1.5	1.5	3
34.	<p>Totals of semester and year of study</p>	2.5	0.5	15
		52	50	130



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VI. REFERENCE OBJECTIVES OF CONTENT UNITS

Objectives	Content units
Theme (chapter) 1. „Cell pathology. Reversible and irreversible cell lesions "	
<ul style="list-style-type: none"> • Understanding the concept, defining the morphological changes of degeneration and necrosis. • Understanding the concept and morphological changes of atrophy, hypertrophy, hyperplasia and metaplasia. • Understanding causality and atrophy variants. • Knowing the causes and structural changes of tissue and cellular lesions. • Understanding the concept of regeneration and repair, morphology and function of granulation tissue, types of wound healing, and regeneration. • Understanding the concept of tissue regeneration, the basic process of wound healing. • Knowing the factors that affect wound healing. 	<p>Ultrastructural changes of cellular lesions. (individual study)</p> <p>Causes of cellular lesions and death.</p> <p>Concept, types, morphological changes of atrophy.</p> <p>Concept and morphological changes of degeneration, hydropic degeneration, lipid, hyaline, fibrinoids, amyloid.</p> <p>Concept and types of necrosis, pathological changes and consequences of necrosis.</p> <p>Concept of adaptation, hypertrophy, hyperplasia, metaplasia.</p> <p>The concept of regeneration and repair, the capacity and process of tissue regeneration.</p> <p>The concept, morphology and function of the granulation tissue and the concept of organization.</p> <p>The wound healing process, the specific of skin healing and the healing of bone fractures.</p> <p>Factors for wound healing.</p>
Theme (chapter) 2. Acute and chronic inflammation	
<ul style="list-style-type: none"> • Understanding the concept, basic pathological changes and classification of inflammation, classification and mediatory effects of inflammation, classification and pathological changes of inflammation. • Understanding the systemic effects of inflammation • Knowledge of causes and significance of inflammation. 	<p>Definition and causes of inflammation, fundamental lesions and pathogenesis of inflammation (alteration, exudation and proliferation), mediators of inflammation. local signs and systemic effects of inflammation. Morphological classification of inflammation: altered inflammation, exudative inflammation and proliferation of inflammation.</p> <p>Variations of inflammation: acute inflammation - serous, fibrinous, suppurative and haemorrhagic; chronic inflammation - basic pathological changes: concept, classification and pathological changes of granulomatous inflammation. Consequences of the process and the significance of inflammation.</p>
Theme (chapter) 3. Haemodynamic disorders	
<ul style="list-style-type: none"> • Understanding the concept of congestion, the characters of hepatic and lung congestion, the concept of thrombosis, embolism and infarction, the conditions and consequences of thrombosis, the variants and the morphology of the infarction. • Understanding the concept of active hyperemia, embolus pathways, types of embolism and effects on the body. • Know the causes of congestion and infarction, the concept, causes and consequences of bleeding. 	<p>Concept and types of hyperemia, causes, morphology and consequences of congestion, pathological changes of chronic pulmonary and hepatic congestion.</p> <p>Concept, conditions, mechanism of thrombosis, morphological evolution and effects of thrombosis.</p> <p>The concept of embolism, types of embolism and effects on the body. Concept of causes and infarct morphology. Concept causes and types of haemorrhage.</p>
Theme (chapter) 4. Pathology of the immune system	



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- Knowing of the general terms, structure and effector cells of the immune system.
- Knowing the specifics of immune reactions in rheumatoid arthritis, systemic lupus erythematosus, progressive systemic sclerosis, dermatomyositis / polymyositis, Sjögren's syndrome, nodular polyarteritis and connective tissue diseases.
- Classification of histocompatibility antigens and how they relate to major histocompatibility complex and transplantation.

Central and peripheral immune system, structure, morpho-functional features.
 The importance of thymus in the evolution of immune processes in children and adults.
 Hypersensitivity reactions, types and mechanisms of evolution.
 Diseases of immune complexes (with particular reference to glomerulonephritis).
 Autoimmune disease.
 Immunodeficiency diseases.
 HLA and transplantation.

Theme (chapter) 5. Tumors

- Definition of neoplasia and malignant cell properties.
- Classification of tumors based on their clinical behavior and histopathological characteristics.
- Description of benign and malignant tumors and local and systemic adverse effects of tumors on the host.
- Defining metastases and explaining their pathogenesis.
- Nomenclature and forms of carcinoma and sarcoma.
- Familiarize yourself with the degree and stage of cancer.
- Nomenclature of tumors and pseudotumoral processes.
- Understanding the role of oncogenes in cancer. Discuss environmental carcinogens that could affect the population.

Neoplasm concept, tumor nomenclature, tumor characteristics (tumor architecture, atypia, histological grade), biological changes of cancer cells, tumor growth (growth rate, mode and spread), tumor effects on the host, etiology and pathogenesis of cancer, of the tumor, comparison of benign and malignant tumors, comparison of carcinoma and sarcoma, precancerous lesions and intraepithelial tumoral lesions, frequent forms of benign and malignant tumors (carcinoma and sarcoma).

Theme (chapter) 6: General diagnostic concepts. Medical Iatrogenia

- Knowing the concept of iatrogenicity and medical error.
- Knowledge of iatrogenic variants.
- Knowing the risk factors in the development of iatrogenes under the conditions of contemporary medicine.

Etiology and pathogenesis. Nozological aspects. Patomorphosis of diseases. Pathology of therapy (iatrogens), pathology of resuscitation. Classification and nomenclature of diseases. The diagnosis, the principles on which it is based. Main disease, concomitant diseases, complications, causes of death.

Theme (chapter) 7. Pathology of the central and peripheral hematopoietic system

- Defining anemia, leukemia and lymphoma, their classification.
- Discussing the different types of Hodgkin's and non-Hodgkin's lymphoma, understanding the underlying pathological changes reported in clinical symptoms.
- Discussing the different types of leukemia and understanding the underlying pathological changes reported in clinical symptoms.

Anemia. Causes, pathogenesis, types, classification. Anemia as a result of haemorrhage (post-hemorrhage), impaired blood circulation and hemolysis (haemolytic). Morphological features. Tumors of the blood system, hemoblastosis. Classificare. Leukemia as a systemic tumor disease of hematopoietic tissues. Causes, pathogenesis, morphological characteristics. Acute leukemia, its types. Chronic myelocytic and lymphocytic leukemia. Hodgkin's disease. Lymphosarcoma, fungoid mycoses, reticulosarcoma, plasmocytoma.

Theme (chapter) 8: Pathology of the cardiovascular system.

- Description of pathogenesis,

Endocarditis. Bacterial endocarditis (septic) (refers to



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pathophysiology and symptoms of coronary vascular disease and atherosclerotic peripheral disease.

- Description of major pathological lesions of atherosclerosis and major complications.
- Description of microscopic features and complications of myocardial infarction and correlation of these pathological findings with clinical and paraclinical symptoms.
- Discussing the pathogenesis of rheumatic heart disease and describing the typical cardiac lesions of rheumatic fever.
- Description of pathogenesis and pathological changes of hypertension.
- Identification of variants of valvular heart disease, such as aortic stenosis, mitral regurgitation, and mitral mitral (rheumatoid) stenosis.
- Description of hypertension and its effects on organs of vital importance.

sepsis). Endobaric parietal endocarditis with eosinophilia. Causes, mechanisms of development, morphology, consequences.

Cardiosclerosis. Causes, mechanisms of development, morphology variants. Atherosclerosis and hypertension: etiology and pathogenesis. Pathological anatomy. Stages of atherosclerosis. Clinical-morphological forms and their characteristics, Causes of death. Atherosclerosis and myocardial infarction, their correlation.

Ischemic heart disease (coronary artery disease). The concept of heart disease. Myocardial infarction. Morphology of acute, repeated and repeated myocardial infarction. Complications, Causes of Long. Chronic ischemic heart disease. Morphological characteristics, complications, Causes of death. Primary and secondary cardiomyopathy. Causes, pathogenesis.

Theme (chapter) 9: Respiratory system pathology

- • Know clinical situations associated with affecting defense mechanisms.
- • Know the 4 classic stages of lobar pneumonia.
- • Know the character, cause, and typical involvement of bronchopneumonia.
- • Identify the correlation between COPD, air pollution and smoking.
- • Identify the morphological changes associated with chronic bronchitis and emphysema.
- • To compare and correlate pathological changes in emphysema and bronchiectasis.
- • Know the histological types of lung cancer.
- Know the pathogenesis and prognosis of lung cancer.

Acute Pulmonary Pathology: Acute Bronchitis. Causes and mechanisms of development. Classification. Morphological features.

Pneumonia: Lobar pneumonia and bronchopneumonia. Etiology, pathogenesis, pathological anatomy. Atypical forms. Complications. Acute destructive processes in the lungs. Abscess, gangrene. Pathogenesis, morphology

Chronic pulmonary pathology: Classification. Chronic bronchitis, bronchiectasis, pulmonary emphysema, bronchial asthma, chronic abscess, interstitial lung disease. Etiology, pathogenesis. Pathological anatomy of nosologic forms. Chronic pulmonary cord.

Lung cancer. Frequency of occurrence, etiology, pathogenesis. Precancerous conditions. Clinical-morphological characteristics. Morphology of central and peripheral lung cancer. Pleurisy. Causes, mechanism of development, morphology, consequences.

Theme (chapter) 10: Pathology of the infectious process. Tuberculosis. AIDS

- To determine the role of the host cell in bacterial infections.
- What are the ways bacteria can destroy cells and / or cause tissue damage.
- What bacterial infections develop during childhood?
- Be able to explain the emergence of new strains of drug-resistant microbial agents.
- Identification of structural elements of tuberculoma.

Acute respiratory infections: flu, paragra. Epidemiology. Etiology, pathogenesis, pathological anatomy, complications, causes of death.

Bacterial infections: meningococcal infection, diphtheria, scarlet fever. Etiology, epidemiology, pathogenesis, pathological anatomy, complications, causes of death.

Tuberculosis. Etiology, pathogenesis. Classification. Primary, secondary and progressive tuberculosis. Pathological anatomy, complications, causes of death.



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- Identification of forms of tuberculosis based on the morphological picture and its correlation with clinical manifestations.
- Identifying the consequences of tuberculosis.

Pathomorphosis of tuberculosis. Primary and secondary immunodeficiency syndromes. Clinical and morphological characteristics. HIV-infection.

Theme (chapter) 11: Pathology of the digestive system

- Define the general categories of oesophageal disorder. Determination of esophagitis variants according to the morphological picture.
- Define the morphology of gastritis.
- To know 2 types of gastric carcinoma.
- Define the morphology of acute and chronic gastric ulcer, the etiology and complications of ulcers.
- To know the aspects of intestinal ischemic disease: macroscopic and microscopic features, complications (gangrene, perforation, peritonitis).
- Can differentiate Crohn's disease and ulcerative colitis from a morphological point of view and correlate with clinical manifestations.
- To know the polyp-cancer morphology.
- Colon cancer: Macroscopic, microscopic features and clinical features of colon adenocarcinoma.

The esophagus pathology. Barrett's esophagus and its clinical importance. Morph Functional Changes and Consequences.
 Acute and chronic gastritis. Causes, mechanism of development, morphological forms, their characteristics. Complications.
 Ulcer disease of the stomach and duodenum. Frequency of occurrence, etiology. Complications, consequences.
 Gastric cancer. Poor conditions. Clinical-morphological characteristics. Histological types. Metastasis features.
 Nonspecific ulcerative colitis. Causes, mechanisms of development, pathological anatomy, complications.
 Crohn's disease. Causes, mechanisms of development, pathological anatomy, complications.
 Intestinal tumors. Frequency of occurrence, etiology, pathogenesis. Forms, morphological features, regularities of metastases, complications.
 Peritonitis.

Theme (chapter) 12: Pathology of liver and pancreas

- Morphologically describe the forms of alcoholic hepatitis: lipid degeneration, hepatitis and cirrhosis.
- To differentiate the pathology of nonalcoholic lipid degeneration (NAFL) and non-alcoholic steatohepatitis (NASH) with alcoholic liver disease and hepatitis C infection.
- Know the microscopic characteristics of cirrhosis and their clinical significance.
- Differentiate the two morphological variants of micronodular and macronodular cirrhosis and understand why such classification can be clinically misleading.
- To differentiate the pathology of acute hepatitis, fulminant and chronic hepatitis.
- Know the morphological features of liver carcinomas. Metastatic liver carcinomas.

Hereditary and acquired, acute and chronic hepatitis. Etiology, pathogenesis, pathological anatomy, complications. Acute fulminant necrosis of the liver and liver cirrhosis, correlations and consequences.
 The role of alcohol in the development of liver steatosis. Pathological anatomy, complications, consequences.
 Acute and chronic, primary and secondary hepatitis. Hepatitis viral. Classification of viral hepatitis. Etiology and pathogenesis. Clinical and morphological forms. Complications, consequences. Hepatitis and hepatic cirrhosis. Alcoholic hepatitis. Acute and chronic. Mechanisms of development, morphological features, complications, consequences. Hepatic cirrhosis. Etiology, pathogenesis and morphogenesis. Classification. Types of cirrhosis, their morphological characteristics. Complications. Hepatolienal Syndrome Portative Hypertension Syndrome. Causes of death. Hepatic cancer.
 Acute and chronic pancreatitis. causes, mechanisms of development, pathological anatomy, complications.
 Cancer of the pancreas. Causes, the mechanism of development.

Theme (chapter) 13: Pathology of the urinary system

- Know the main causes and mechanisms that cause acute renal failure.

Glomerulonephritis. Modern classification. Etiology, pathogenesis. Immunomorphological characteristics of



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- Describe uremic syndrome and the possible mechanisms that cause its clinical manifestations.
- Understand the pathogenesis of glomerulonephritis
- Define nephrotic syndrome and know the clinical and morphological features of diseases that cause nephrotic syndrome.
- Know the clinical and morphological characteristics of acute and chronic pyelonephritis.
- Know major clinical syndromes with which a patient with kidney problems may be present.
- Know major glomerular clinical syndromes.
- How does fibrosis differ in chronic pyelonephritis compared to chronic glomerulonephritis or long-term benign hypertension?
- Know the macroscopic difference between adenoma and nephrocellular carcinoma.

different forms of glomerulonephritis.
 Acute renal failure - necrotic nephrosis. Causes, pathogenesis, morphological features, complications, consequences.
 Chronic obstructive tubular disease. Paraproteinemic nephrosis. Pathogenesis, morphology, complications, consequences.
 Tubulo-interstitial nephritis. Etiology, pathogenesis, pathological anatomy, complications, consequences.
 Acute and chronic pyelonephritis. Etiology, pathogenesis, pathological anatomy, complications, consequences.
 Nephrolithiasis. Etiology, pathogenesis, pathological anatomy, complications, consequences.
 Interconnection with pyelonephritis. Particularities of nephrolithiasis in children.
 Renal tumors. Nephrocellular carcinoma. Causes, morphological features.

Theme (chapter) 14: Pathology of the male genital system

- • To know the etiological factors in acute bacterial prostatitis, chronic bacterial prostatitis.
- • Know the causes and consequences of prostate tumors.
- • Classification of testicular tumors. Compare the morphology of the two major types of testicular tumors in germ cells: Seminoma and non-hemoglobin germ cell tumors.
- • Know the pathological and clinical features of nodular hyperplasia or benign prostatic hyperplasia.
- To know the pathological features and clinical features of prostatic carcinoma and the concept of classification and prognosis for prognosis..

Prostate hypertrophy (dihormonal hypertrophic prostateopathy). Forms, morphological features. Complications.
 Prostate cancer. Frequency. Causes. Morphological features. Complications.
 Testicular cancer. Classification. Morphological features. Complications.
 Tumors of epididymis, spermatic cords and testicular membrane. Morphology.
 Syphilis. Etiology, pathogenesis. Primary, secondary, tertiary syphilis. Syphilis congenital (early, late).
 Sifilis visceral. Pathological anatomy, complications, causes of death.

Theme (chapter) 15: Pathology of the female genital system. Mammary gland

- To know LSIL and HSIL, glandular and cervical squamous neoplasia.
- What is the difference between CIN 3 and invasive carcinoma?
- Classification of malignant ovarian tumors, tumors associated with endometriosis.
- Knowing the significance of borderline ovarian tumors.
- Understanding the classification of endometrial hyperplasia and the clinical implications of simple / complex hyperplasia with / without cytological atypia.
- To differentiate the complete and incomplete hydatidiform moles with regard to: histology and clinical correlation.
- Know the most common precursor lesions of gestational trophoblastic disease.

Endometrial glandular hyperplasia. Morphological features, complications.
 Acute and chronic endometritis. Causes, pathogenesis, morphology, complications. Uterine cancer. Frequency of occurrence. Causes. Precancerous conditions. Classification. Morphological characteristics, particularities of cervical cancer and development of uterine cancer. Histological forms. Particularities of metastatic development. Complications.
 Ovarian cancer. Frequency. Causes. Precancerous conditions. Classification. Morphological features. Histological forms. Particularities of the development of metastases. Complications.
 Acute and chronic mastitis. Causes, pathogenesis, morphology, complications. Fibrochemical disease of the mammary gland. Classification. Non-proliferative and proliferative forms. Morphological features, complications.



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- To differentiate the following mammary gland tumors: fibroadenoma, fibroid tumor, intraductal papilloma.

Cancer of the mammary gland. Frequency. Causes. Precancerous conditions. Classification. Morphological features. Particularities of metastatic development. Abortion, premature labor. Causes, morphological features.

Theme (chapter) 16: Endocrine system pathology

- To know the morphological, molecular and clinical features of pituitary adenomas, including macroscopic and microscopic image of adenomas, mass-related manifestations, endocrine manifestations, especially those related to growth hormone production, ACTH, prolactin.
 - To differentiate the main macroscopic, microscopic and clinical features of the following thyroid neoplasms: follicular adenoma, papillary, follicular, medullary carcinoma.
 - Know the most common causes of primary hyperparathyroidism.
 - Know the clinical features and the pathogenesis of Graves disease as a prototype of hyperthyroidism.
 - To correlate the pathogenesis of the various causes of Cushing's syndrome
 - Know the morphological changes of various organs, especially: pancreas, small and large vessels, kidneys, retina in diabetes.

Hypophysis: Acromegaly. Etiology, pathogenesis. Morphology. Causes of death. Cushing's disease. Etiology, pathogenesis, morphology. Causes of death.
Adipohogenital dystrophy. Etiology, pathogenesis, morphology. Diabetes insipidus. Etiology, pathogenesis, morphology.
Adrenal glands: Addison's disease. Etiology, pathogenesis, morphology. Tumors of the adrenal glands. Types, morphology, complications.
Thyroid gland: Goiter (struma). Classification. Hypothyroidism and atiodiasis. Morphological features. Thyroid gland tumors. Morphology, complications.
Endocrine pancreas: Diabetes mellitus (sugar disease). Etiology, pathogenesis, pathological anatomy. Macro- and microangiopathy as a manifestation of diabetes. Types of diabetic microangiopathy, morphology; diabetic glomerulosclerosis. Complications. Causes of death. Particularities of the development of diabetes in children (Mauriac syndrome).

Theme (chapter) 17

: Pre- and perinatal pathology

- Define the expressions "appropriate for gestational age" and "inadequate to gestational age".
 - Know the most common fetal, maternal and placental causes of infants.
 - Apgar score principles.
 - Distinguish malformation, deformity, disruption, sequence and syndrome.
 - Know the clinical characteristics and major causes of oligohydramnios.
 - Define agenesis, hypoplasia and dysplasia.
 - Classification of congenital malformations and their clinical significance.
 - Congenital pale and cyanotic vices, clinical structure and significance.
 - Hydrocephaly: causes, clinical significance and consequences.
 - To know the morphology of anencephaly, cerebral hernia and spina bifida.

Trofoblastic disease. Hydatiform mole. Morphological features. Complications.. Chorioncarcinomul. Histogenetic, morphological, metastatic development. Period of progeny and kimatogenesis. Causes of gametopaths, blastopaths and embryopathies. Congenital malformations of the heart, central nervous system, urinary tract, digestive tract. Fetal pre- and peri-maturity. Asphyxia causes and consequences. Pneumonia. Perinatal disorders of cerebral circulation. Intranasal cerebral bleeding. Hemolytic disease. Cytomegaly and toxoplasmosis. Specific histomorphological signs.

Theme (chapter) 18: Pathology of central and peripheral nervous system

- Familiarize yourself with a vocabulary about nervous system diseases.
- Understand the basic pathogens of neurological

The discirculatory pathology of the brain. The cerebral stroke. Causes and consequences. Cerebral degenerative pathology: Alzheimer's disease.



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<p>disease.</p> <ul style="list-style-type: none"> • To correlate the clinical and morphological characteristics of cerebrovascular diseases. • Know the process of organizing an ictus. • Know the role of thrombosis and embolism in the CNS infarction. To know three important sources of emboli. • Explain the basis of hemorrhage in hemorrhagic infarction. Be able to differentiate with primary intraparenchymal haemorrhage. • Understand the concept of histological and biological neoplasm in primary cerebral neoplasms. • Comparison of clinical manifestations of volume formations and generalized intracranial pressure. 	<p>Etiology, pathogenesis, morphological changes of the brain, complications.</p> <p>Amyotrophic lateral sclerosis. Etiology, pathogenesis, morphological features, complications.</p> <p>Disseminated sclerosis. Etiology, pathogenesis, morphology, complications. Encephalitis.</p> <p>Classification. Etiology, pathogenesis, morphology, complications.</p> <p>Infectious brain pathology: Encephalitis (tick-borne encephalitis).</p> <p>Tumors of the nervous system: neuroecto-dermal, meningo-vascular of the vegetative and peripheral nervous system.</p>
Theme (chapter) 19: Pathology of the osteoarticular system	
<ul style="list-style-type: none"> • Knowing the morphological changes in bone formation. • Ossification in degenerative processes • Morphological changes in aseptic and infectious necrosis • Nomenclature and morphology of bone tumors 	<p>Fracture of tubular and spongy bones: causes, consequences. Changes in age of the osteoarticular system. Aseptic necrosis. Osteomyelitis.</p> <p>Infectious, reactive and degenerative arthritis.</p> <p>Morphological changes and consequences.</p> <p>Tumors of bones and cartilage. Classification, morphology, consequences.</p>
Theme (chapter) 20: Pathology of skin and soft tissues	
<ul style="list-style-type: none"> • Morphological comparison of different skin rashes. • Benign and malignant squamous tumors: Morphological features. • The morphological and biological particularities of basalioma. • Particularities of benign muscular tumors. • Principles of malignancy specific to uterine sarcomas and non-myometrial leiomyuscular sarcomas. 	<p>Skin rash: classification, morphological picture.</p> <p>Tumors of the skin: Squamous carcinoma, basal cell.</p> <p>Muscular degenerative pathology. Muscular tumors: classification, morphology, clinical aspects, metastatic features.</p>

VII. PROFESSIONAL (SPECIFIC (SC)) AND TRANSVERSAL (TC) COMPETENCES AND STUDY OUTCOMES



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Professional (specific) (SC) competences

- Acquiring the method of describing the macroscopic and microscopic lesions.
- Acquiring the method of formulating an anatomopathological (lesion) diagnosis based on the description
- Acquiring the specialized language
- Apply differential diagnosis between different types of lesions according to the study method
- Developing skills in drafting and presenting a specialized report under the required editing conditions
- Assimilation of sampling technique for histopathological examination
- Understanding the role of establishing anatomopathological diagnosis in the context of individual pathology, group pathology, post-mortem examination and research activity
- Understanding the necessity of correlating the anatomopathological diagnosis with other methods of investigation (ultrasound examination, radiological examination, microbiological exam, etc.), finally, the diagnosis being the result of team work
- Awareness of the need for continuous documentation and continuous practice of the acquired techniques
- Awareness of the need to establish an anatomopathological diagnosis in live animals and post-mortem

✓ Transversal competences (TC)

- Improving the capacity of decisional autonomy;
- Forming your personal attitude
- Ability to social interaction, group work with different roles
- Fitting in interdisciplinary projects, extracurricular activities,
- Improving digital skills
- Developing different learning techniques
- Selection of digital materials, critical analysis and conclusions.
- Presentation of individual scientific projects.

✓ DISCIPLINE FINALITY

- Demonstrate professionalism and high ethical standards in all aspects of medical practice, especially competence, honesty, integrity, compassion, respect for others, professional and social responsibility;
- Demonstrate the proper use of laboratory tests and radiographic studies in making diagnostic decisions.
- Demonstrate the ability to assess patient medical problems and make accurate assumptions for diagnosis and treatment decisions.
- Demonstrate the ability to acquire new information and data and critically assess their validity and applicability in professional decision-making, including the application of information technology systems to support clinical decision-making.



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VIII. STUDENT'S SELF-TRAINING

No.	Expected product	Implementation strategies	Assessment criteria	Implementation terms
1	Work with information sources	<p>Careful reading of lecture or the textbook material on the theme.</p> <p>Reading the questions on the theme, that requires a reflection on the subject. Refer to the list of additional information sources on the theme. Choose the source of additional information on the theme.</p> <p>Reading of the text entirely, carefully and writing down the essential content.</p> <p>Making generalizations and conclusions related to the importance of the theme/subject.</p>	<p>The ability to extract the essential; skills to interpret; the volume of work</p>	throughout the semester
2	Working with the workbook	<p>To analyze the information and the images on the theme based on the material from lectures and textbook. Consistent solving the tasks. Drawing conclusions at the end of each lesson. The verification of the aims of the lesson in question and assessment of their achievement.</p> <p>Searching for additional information, using e-mail addresses and additional bibliography.</p>	<p>The volume of work, solving situational problems, the ability to draw conclusions</p>	throughout the semester
3	Application of various learning techniques		<p>The volume of work, the degree of penetration into the essence of various themes, the level of scientific argumentation, quality of conclusions, elements of creativity, demonstration understanding the problem, formation of personal attitude</p>	throughout the semester
	Working with materials	<p>Self-assessment online, study of materials online on the WEBSITE of the</p>	<p>The number and duration of entries</p>	throughout the semester



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No.	Expected product	Implementation strategies	Assessment criteria	Implementation terms
4	online	department, expressing one's own opinions through the forum and chat	on the SITE, the results of self-assessment	
5	Preparation and presentation of research	Choice of the theme for research, making the research plan, provision of the terms of realization. Setting PowerPoint project / theme components, purpose, results, conclusions, practical applications, bibliography. Reviews of peers. Reviews of professors and lecturers	Volume of work, the degree of penetration into the essence of the theme of the project, the level of scientific argumentation, the quality of conclusions, elements of creativity, personal attitude formation, coherence of exposure and scientific correctness, graphic presentation, presentation method.	throughout the semester



IX. METHODOLOGICAL SUGGESTIONS FOR TEACHING-LEARNING-ASSESSMENT

• *Teaching and learning methods used*

The teaching of the morphopathology discipline uses different methods and didactic methods designed to achieve and effectively realize the objectives of the didactic process. In the theoretical lessons, with the help of traditional methods (lesson-exposure, lesson-conversation, synthesis lesson) are used and modern methods (lesson-debate, lesson-conference, problem lesson). Practical work uses forms of individual activity, in group, situation issues. In order to acquire deeper materials, different semiotic systems (scientific, graphic and computerized language) and teaching materials (tables, schemes, micro photographers) are used. Courses and extracurricular activities include Communication Technologies - PowerPoint presentations, on-line lessons.

- **Recommended learning methods**
- **Observation** - Identification of characteristic elements in different pathologies, comparison of normal and pathological structures.
- **Analysis** - Imaginary decomposition of the whole into component parts. Highlighting the essential elements. Studying each element as part of the whole.
- **Schema / figure analysis** - Selection of required information. Recognition based on knowledge and information selected structures indicated in the scheme, drawing. Analysis of the functions / role of recognized structures.
- **Comparison** - Analysis of the first object / process in a group and the determination of its essential features. Analysis of the second object / process and the determination of its essential features. Comparing objects / processes and highlighting common features. Comparing objects / processes and determining differences. Setting criteria for differentiation, which underlies the differential morphological diagnosis between several pathological processes. Formulation of conclusions.
- **Classification** - Identify the structures / processes needed to be classified. Determining the criteria on which classification is to be made. Distribution of structures / processes by groups according to established criteria.
- **Schematic drawing** - Selection of elements to be included in the scheme. Playing the elements selected by different symbols / colors and indicating their relationships. Wording of an appropriate title and legend of the symbols used.
- **Modeling** - Identify and select the elements needed to model the phenomenon. The imaging (graphical, schematic) of the studied phenomenon. Realizing the phenomenon using the developed model. Formulation of conclusions, based on arguments or findings.
- **Experiment** - Formulation of a hypothesis, based on known facts, on the process / phenomenon studied. Verifying the hypothesis by performing the processes / phenomena studied under laboratory conditions. Formulation of conclusions, deduced from arguments or findings.

• *Applied teaching strategies / technologies (specific to the discipline)*

„Brainstorming”, „Multi-voting”; "The round table"; "Group Interview"; "Case Study"; "Creative Controversy"; "Focus-group technique", "Portfolio".

Virtual Practices

- Methods of assessment (including an indication of how the final grade is calculated).



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Current: front and / or individual control

- (a) applying docimological tests,
- (b) solving problems / exercises,
- (c) analysis of case studies
- (d) performing role-plays on the topics discussed.
- (e) control work

• **Final:** Exam

• The final mark will consist of an average grade of four totalizations, including computerized test and practical skills exam (part 0.5), final test in computerized system (share 0.5).

The average annual mark and the marks of all stages of final examination (computer assisted, test, oral) - are expressed in numbers according to the mark scale (according to the table), and the final mark obtained is expressed in number with two decimals, which is transferred to student's record-book.

Method of mark rounding at different assessment stages

Intermediate marks scale (annual average, marks from the examination stages)	National Assessment System	ECTS Equivalent
1,00-3,00	2	F
3,01-4,99	4	FX
5,00	5	E
5,01-5,50	5,5	
5,51-6,0	6	
6,01-6,50	6,5	D
6,51-7,00	7	
7,01-7,50	7,5	C
7,51-8,00	8	
8,01-8,50	8,5	B
8,51-8,00	9	
9,01-9,50	9,5	A
9,51-10,0	10	

Absence on examination without good reason is recorded as "absent" and is equivalent to 0 (zero). The student has the right to have two re-examinations.



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X. RECOMMENDED LITERATURE:

A. Compulsory:

1. Materialele prelegerilor
2. Ie. Zota, V. Vataman. Morfopatologie generală, Chişinău, 2014
3. Vinay Kumar și coaut. Robbins patologie: bazele morfologice și fiziopatologice ale bolilor, ediția a 9-a. București, Editura Medicală CALLISTO, 2015
4. Vinay Kumar et al. Robbins Basic Pathology, 9th ed, Elsevier, 2013
5. Robbins and Cotran. Pathologic basis of disease 6, 7, 8th editions
6. Harsh Mohan. Textbook of Pathology, 6th edition, New Delhi, 2010
7. Klatt, Edward C. Robbins and Cotran Atlas of Pathology, 2th ed., Elsevier, 2010
8. A. Strukov , V. Serov. Anatomia patologică, Chişinău, 1999

B. Additional

1. E.Rubin-J.L.Farber: Pathology (J.B.Lippincott 1994). · 3rd edition (1999)
2. Nemes Z. Atlas of Histopathology (TEMPUS edition, Debrecen 1998) CP. L. Wheater, H.G, Burkitt, Stevens J.S. Lowei.: Basic Histopathology a Colour Atlas and Text. (Churchill Livingstone;
3. 4Rev Ed edition, 2002)

C. WEB:

General Informations: www.path2.sote.hu

Online available case center: <http://casecenter-korb2.sote.hu/casecenter/>

User name and password for Java version: student_jav

Panoramic Viewer free download: <http://www.3dhistech.com/>

Practice test: <http://casecenter-korb2.sote.hu/espractice/>