MINISTRY OF HEALTH PROTECTION OF UKRAINE
ODESSA NATIONAL MEDICAL UNIVERSITY

Faculty of Medicine

Department of Histology, Cytology, Embryology and Pathological Morphology with a Course in Forensic Medicine

Syllabus of the academic discipline "Pathomorphology"

Scope of the academic discipline	Total hours per discipline: 210 hours, 7.0 credits. Semesters: V - VI . 3 years of study.
Days, time, place of educational discipline	According to the schedule of classes. Department of normal and pathological clinical anatomy. Odesa, morphological building of ONMedU, 2nd floor. Valikhovsky lane, 3a. Base of the department: Prosecution, university clinic, str. Tinista, 8.
Teacher(s)	Sytnikova V.O., MD in Medicine, Professor; Lytvynenko M.V., Ph.D. in Medicine, associate professor; Buryachkivskyi E.S., Ph.D. in Medicine, associate professor; Oliynyk N.M., Ph.D. in Medicine, associate professor Narbutova T. E., Ph.D. in Medicine, associate professor; Artiomov O.V., Ph.D. in Medicine, associate professor Syvyi S.M., assistant; Savenko T.O., assistant
Contact Information	Information by phone: Lytvynenko Marianna Valeriivna, head teacher of the discipline "Pathomorphology" +38-066-754-55-26 e-mail: mariana.lytvynenko@onmedu.edu.ua Pletnyova Angela Ivanivna, laboratory assistant of the department : 728-54-17 e-mail: anatomy@onmedu.edu.ua Face-to-face consultations: from 14.30 to 16.00 every Thursday, from 9.00 to 12.00 every Saturday Online consultations: from 14. 3 0 to 16.00 every Thursday, from 9.00 to 12.00 every Saturday. The link to the online consultation is provided to each group during classes separately.

COMMUNICATION

Communication with applicants will be conducted in the classroom (face-to-face).

During distance learning, communication is carried out through the Microsoft Teams platform, as well as through e-mail correspondence, Viber, Telegram messengers (through groups created in Viber, Telegram for each group, separately through the head of the group).

ABSTRACT OF THE ACADEMIC DISCIPLINE

Subject the study of the discipline - the educational discipline " Pathomorphology ", is the

structural basis of human diseases for in-depth learning of the fundamental foundations of medicine and the clinical picture of diseases with further use of the acquired knowledge in the practical work of a doctor, practicing communication skills.

Prerequisites and post-requisites of the discipline (place of the discipline in the educational program):

Prerequisites: Ukrainian language (professionally oriented), foreign language (professionally oriented), Latin language and medical terminology, normal anatomy, clinical anatomy, histology, cytology and embryology, general and clinical pathological physiology, forensic medicine, microbiology, virology and immunology, pharmacology , general pharmacy and clinical pharmacology, propaedeutics of internal diseases and therapy, pediatrics, obstetrics and gynecology, infectious diseases, family medicine, phthisiopulmonology , general surgery, internal medicine.

Post-requisites: Section-biopsy diagnosis, Biopsy-section course, Pathological anatomy (internship), Pathological anatomy (Doctor of Philosophy).

The purpose of the discipline: Mastery by the applicant of higher education of knowledge and formation of elements of professional competences in the field of pathomorphology, and improvement of skills and competences acquired during the study of previous disciplines.

Tasks of the discipline:

1. Formation of abilities and skills in the differential diagnosis of pathological processes, using the main pathomorphological methods so far.
2. Mastering the ability to interpret etiology, to determine pathogenesis and pathological changes in diseases at various stages of their development (morphogenesis), structural foundations of complications and consequences of the disease.
3. Improvement of skills to interpret cell pathology and to justify clinical and morphological characteristics of general pathological processes that determine the manifestations of diseases.
4. Improving skills to determine the consequences arising from changes in human life conditions and during treatment and diagnostic manipulations.

Expected results:

As a result of studying the academic discipline, the applicant must:

to know:

1. Terms used in the course of pathomorphology and basic methods of pathological examination.

2. Concepts of etiology, pathogenesis, morphogenesis. pathomorphosis, doctrine of disease, nosology, principles of classification of diseases.

3. The essence and main regularities of general pathological processes.

4. Characteristic changes of internal organs in the most important human diseases.

5. To have specialized knowledge about the structural basis of diseases, to know standard methods of conducting an autopsy and intravital diagnosis of diseases.

6. Know the pathogenesis and pathological changes in diseases at different stages of their development (morphogenesis), the structural basis of complications and consequences of the disease;

Be able to:

1. Describe morphological (macroscopic, microscopic and ultrastructural changes in tissues and organs in typical pathological processes and diseases.

2. Based on the description, draw a conclusion about the nature of the pathological process and its clinical manifestations.

3. To appreciate the results of the autopsy.

4. Evaluate morphological changes in biopsy and section materials.

5. Analyze the morphological manifestations of diseases.

6. To analyze the structural basis of the development of diseases and their clinical manifestations, the structural basis of recovery, complications and consequences with further use of the acquired knowledge in the practical work of a doctor.

7. Carry out differential diagnosis between pathological processes.

DESCRIPTION OF THE ACADEMIC DISCIPLINE

Forms and methods of education

The discipline will be taught in the form of lectures (30 hours), practical classes (96 auditory hours); organization of the applicant's independent work (84 hours).

Teaching methods: conversation, solving clinical situational problems, practicing the skills of microscopic and macroscopic diagnosis of pathological processes in organs and tissues, carrying out differential diagnosis using the main methods of pathomorphological findings, improving the skills to interpret cell pathology and substantiate the clinical and morphological characteristics of general pathological processes that determine the manifestations of diseases, improving the skills to determine the consequences of various pathological conditions.

Content of the academic discipline

Content module 1.

Introduction. Morphology of damage and death of cells and tissues.

Topic 1. Subject and tasks of pathomorphology. Pathomorphological research methods. The main stages of the development of pathomorphology. Advanced level of knowledge. Morphology of reversible and irreversible damage to cells and tissues. Intracellular accumulation of proteins, carbohydrates and lipids (parenchymal dystrophy). Pathological anatomy as a science, a field of practical medicine and an educational subject. Problems of pathological anatomy. Levels of research on the structural basis of diseases. Material (objects) and methods of pathomorphological research. The main stages of the development of pathological anatomy. Contribution of domestic scientists to the development of world pathomorphology. Definition of the term "dystrophy", causes of dystrophy. Pathogenesis and mechanisms of dystrophy. Classification of dystrophy. Morphogenesis and morphology of parenchymal (intracellular) protein, fat and carbohydrate dystrophies (lipidoses). Elements of ultrastructural cell pathology. Cell-matrix interactions. Cellular and extracellular mechanisms of trophic regulation. The concept of ultrastructural cell pathology. Damage to the cytoplasmic membrane, mitochondria, endoplasmic reticulum, Golgi apparatus, lysosomes. Reversible and irreversible nuclear damage. Damage to mitosis, causes, types.

Topic 2. Morphological changes of the extracellular matrix (stroma) as a response to damage (stromal-vascular dystrophies). Pathomorphology of extracellular accumulation of complex proteins (hyalinosis), fats and carbohydrates. Exhaustion of the body. Stromal-vascular (extracellular) protein, carbohydrate and fatty dystrophies, varieties, morphology, mechanisms, causes, outcomes.

Topic 3. Disorders of metabolism and their metabolism. Morphology of pathological accumulation of endogenous and exogenous pigments. Morphology of mineral metabolism disorder. Definition of mixed dystrophy, classification. Classification of hemoglobinogenic pigments. Types of violations of their exchange. Violation of the metabolism of lipidogenic pigments. Violation of nucleoprotein metabolism. Disorders of calcium metabolism, types of calcinosis, its causes and morphology.

Topic 4. Necrosis - definition, terms and phases of development, consequences. Clinical and morphological forms of necrosis. Pathological anatomy of multiple organ failure. Fundamentals of Thanatology. Death, mechanisms, signs. Biological, medical, social aspects due to a chronic incurable disease. The concept of thanatogenesis. Structural mechanisms of cessation of activity of

vital organs during the natural course of the disease. Complications of stopping the work of the heart, lungs, brain, kidneys, and liver. Definition of necrosis, its causes, types, depending on the mechanism of action of the pathogenic factor. Morphological signs of necrosis. Early morphological and histochemical changes. Morphological signs of necrosis in the nuclei. Morphological signs of necrosis in the cytoplasm and intercellular substance. Clinical and morphological forms of necrosis. Coagulation necrosis, causes of development, types, microscopic and macroscopic changes in areas of necrosis. Enzymatic and non-enzymatic fat necrosis, localization, causes. Gangrene, definition, classification. Dry and wet gangrene, localization, macroscopic changes in necrotic tissue. Bedsores, features of development, localization. Collective (wet) necrosis, location, macro-microscopic changes. Exits of necrosis. Apoptosis, definition, morphological manifestations of apoptosis. The influence of external factors on the regulation of apoptosis. Categories of autonomous apoptosis. Signs of general death, mechanisms and terms of their development.

Topic 5. Practical skills: section "Introduction. Morphology of damage and death of cells and tissues". Practicing of practical skills.

Content module 2.

Disorders of blood and lymph circulation. Violation of hemostasis. Inflammation.

Topic 6. Acute systemic circulatory disorders (acute coronary insufficiency, shock) and systemic circulatory disorders in chronic heart failure and their consequences. Regional blood circulation disorders (hyperemia, ischemia, plasmarrhagia, bleeding and hemorrhage). Violation of lymph formation and circulation. Varieties of general arterial congestion. Local arterial congestion, types, causes, morphology. Pathomorphology , consequences of stasis. General venous congestion, types, causes of development, changes in the lungs and liver in chronic venous congestion. Blood thickening, causes, morphological changes in organs. Thinning of the blood, causes, meaning. Bleeding, definition, causes of development, classification. Hemorrhage, types, morphology. Shock, definition, classification. Stages of development of shock, morphological changes. Heart attack, definition, causes. Types of heart attacks. Mechanisms of development and morphological changes in the infarct zone. Disorders of lymphatic circulation, causes, classification. Acute and chronic local lymphedema. Morphology of acute and chronic general lymphedema.

Topic 7. Violations of hemostasis: hemorrhagic syndrome, thrombosis, DIC-syndrome. Embolism. Thromboembolism of the pulmonary artery, thanatogenesis. Thrombosis, definition, causes and mechanisms of thrombosis. Morphology and types of blood clots. Favorable and unfavorable outputs thrombosis Definition and stages of DIC-syndrome, causes. Definition of embolus, types of embolus. Ways of movement of emboli. Morphology of thromboembolism of the pulmonary artery and vessels of the great circle of blood circulation. Violation of ion-osmotic and water balance. A general idea of edema, composition of tissue fluid, classification, localization of fluid accumulation. Local edema, its regulation, mechanism of development, types. General edema, its varieties and mechanisms of occurrence. Dehydration of the body, mechanisms of development, degrees of dehydration.

Topic 8. Inflammation: causes, morphogenesis. Pathomorphology of exudative inflammation. Definition of inflammation, etiology. Morphological signs of inflammation. Morphological changes during alteration, exudation and proliferation. Classification of inflammation by morphology, course and depending on the reactivity of the body. Forms of exudative inflammation.

Topic 9. Proliferative (productive) inflammation: with the formation of acute condylomas, around animal parasites, intermediate productive inflammation, granulomatous inflammation. Specific proliferative inflammation. General characteristics of productive inflammation, classification , methods . Intermediate (interstitial) inflammation, morphology, outcome. Granulomatous inflammation, definition of granuloma, etiology, stages of granuloma. Productive inflammation with the formation of polyps and acute condylomas; localization, etiology, consequences.

Topic 10. Practical skills: section "Disorders of blood and lymph circulation. Inflammation". Practicing of practical skills.

Content module 3.

Pathology of the immune system. Regeneration. Compensatory and adaptive processes. Tumors

Topic 11. Molecular and pathomorphological bases of the immune response. The immune system in the prenatal and postnatal period. Pathology of immune processes: amyloidosis, hypersensitivity reactions, transplant rejection. Immune deficiency. Autoimmune diseases. Primary and secondary organs of immunogenesis, their role in the development of immune reactions. Types of immune reactions. Definition of immunopathological processes, classification. Violations of immunogenesis associated with pathology of the thymus and pathology of peripheral lymphoid tissue. Mechanisms of development of immediate and delayed hypersensitivity reactions. Classification of hypersensitivity reactions. Morphological characteristics of delayed-type hypersensitivity (HDT) and immediate-type hypersensitivity (HIT) reactions. Morphological characteristics of the reaction of transplant rejection. Definition and classification of autoimmune diseases. Classification of immunodeficiency states. Classification of primary immunodeficiency syndromes. Combined immunodeficiency syndromes, types, state of organs of immunogenesis, clinical manifestations. Syndromes of insufficient cellular and humoral immunity, state of organs of immunogenesis, clinical manifestations. Reasons for the development of secondary immunodeficiency states.

Topic 12. Regeneration. Structural basis of physiological adaptation of organs and cells. Morphology of cell accommodation processes. Compensatory and adaptive processes. Definition of regeneration, classification. Regulation and phases of the regenerative process. Characteristics of physiological regeneration. Types of reparative regeneration. Characteristics of complete and incomplete regeneration. Pathological regeneration, conditions of occurrence, types. Types of wound healing. Wound healing by primary and secondary tension. The concept of compensation and adjustment. Stages of the compensatory process. Manifestations of adaptive processes. Hypertrophy and hyperplasia, definition, classification. Atrophy, definition, classification. Definition of organization, encapsulation, cirrhosis and sclerosis, morphology. Metaplasia and dysplasia, definition, morphological characteristics. Degrees of dysplasia.

Topic 13. Oncogenesis. Anatomical and microscopic features and types of growth of benign and malignant tumors. Morphological characteristics of the main stages of development of malignant tumors. Clinical and morphological nomenclature of tumors. Benign and malignant non-epithelial (mesenchymal) tumors. Sarcoma: features of development and metastasis. Tumors of fibroblastic, myofibroblastic and fibrohistiocytic origin. Tumors from adipose and muscle tissue, tumors from blood vessels. Tumors, definitions, modern theories of carcinogenesis. Tumor morphogenesis, morphogenetic variants of tumor formation. Structure of the tumor. Types of tumor growth. Tumor atypism, definitions, types. Morphological characteristics of tissue and cellular atypism. Precancerous (precancerous) conditions and changes, morphology. Metastasis: types, regularities, mechanisms. Relapse, definition. Modern classification of tumors. Morphological features of benign tumors. Morphological features of malignant tumors. General characteristics and nomenclature of tumors from tissues originating from mesenchyme.

Topic 14. Epithelial tumors: benign organ-nonspecific epithelial tumors, cancer (features of development, metastasis, histological forms). Nomenclature of epithelial tumors. Morphological features of epithelial tumors without specific localization. Benign and malignant tumors from the covering epithelium.

Topic 15. Morphological features of epithelial tumors of individual organs. Benign tumors of the stomach and intestines from Kulchytsky's enterochromaffin cells. Organ-specific tumors of the

thyroid gland, kidneys, skin: benign and malignant. Benign and malignant uterine tumors, types, morphology. Tumors of the salivary glands and oral cavity.

Topic 16. Nomenclature and morphological features of tumors of nervous tissue. Features of tumors of the central nervous system. Classification and morphological features of tumors of the central nervous system. Benign neuroectodermal tumors. Low-differentiated and embryonic neuroectodermal tumors. Benign and malignant tumors of the meninges. Mature and immature tumors of peripheral nerves. Benign and malignant tumors of sympathetic ganglia.

Topic 17. Nomenclature and morphological features of tumors originating from melanin-producing tissue. Tumors from cambial embryonic tissues. Tumors of children's age, which develop according to the type of tumors of adults. Melanoma, classification. Nevus Peculiarities of childhood tumor growth.

Topic 18. Practical skills: section "Immunopathological processes. Regeneration, processes of adaptation and compensation. Tumors". Practicing of practical skills.

Content module 4.

Diseases of the blood system and cardiovascular system. Diseases of the nervous system.

Topic 19. Anemia. Thrombocytopathies. Definition, classification and morphological characteristics of anemias. Definition, classification, morphological characteristics thrombocytopenia and thrombocytopenia. Classification, morphological characteristics of coagulopathies.

Topic 20. Tumors of hematopoietic and lymphoproliferative tissue. Definition, classification, general morphological characteristics of leukemias. Types, stages of the course, morphological characteristics of acute leukemia. Types, stages of the course, morphological characteristics of chronic leukemia. Pathohistological types, morphological characteristics of Hodgkin's disease, causes of death. General characteristics, classification, morphological manifestations and prognosis of non-Hodgkin's lymphomas.

Topic 21. Atherosclerosis and arteriosclerosis. Coronary heart disease. Definition of atherosclerosis, risk factors, modern theories. Morphogenesis of macroscopic changes in atherosclerosis. Morphogenesis of microscopic changes in atherosclerosis. Clinical and morphological forms of atherosclerosis, organ lesions in atherosclerosis. Definition, risk factors, connection of coronary heart disease with atherosclerosis and hypertension. Morphology of acute, recurrent and repeated myocardial infarction. Consequences, complications, causes of death in myocardial infarction. Morphological characteristics, complications, causes of death in chronic ischemic heart disease.

Topic 22. Hypertension and arteriolosclerosis. Hypertensive disease and symptomatic arterial hypertension. Hypertensive disease: definition, risk factors. Morphological changes in blood vessels, heart, changes in organs in hypertensive disease.

Topic 23. Cerebrovascular disease. Alzheimer's disease. Multiple sclerosis. Amyotrophic lateral sclerosis. Postresuscitation encephalopathy. Diseases of the peripheral nervous system. General characteristics, classification, background diseases and risk factors of cerebrovascular disease. Infarct (ischemic stroke) of the brain: morphological characteristics. Morphological characteristics, consequences of hemorrhagic stroke. Morphological characteristics , complications of spontaneous intracranial hemorrhage. Morphological characteristics, complications of spontaneous subarachnoid hemorrhage. Morphological characteristics, complications of Alzheimer's disease. Morphological characteristics, complications of multiple sclerosis. Morphological characteristics, complications of ocular amyotrophic sclerosis. Morphological characteristics, complications of postrheanimation encephalopathy. Morphological characteristics, complications of diseases of the peripheral nervous system.

Topic 24. Systemic connective tissue diseases with autoimmunization: rheumatism, systemic lupus erythematosus, rheumatoid arthritis, systemic scleroderma, dermatomyositis, Bekhterev's disease. Endocardial and myocardial diseases. General characteristics of systemic diseases of connective tissue: violation of immune homeostasis and systemic progressive disorganization of connective tissue in rheumatic diseases. Morphology of Bekhterev's disease. Morphogenesis, pathomorphology, complications and causes of death in systemic lupus erythematosus. Pathological anatomy, visceral manifestations, complications, causes of death in systemic scleroderma. Pathological anatomy of dermatomyositis. Complications, causes of death. Cardiomyopathies, Leffler's endocarditis, idiopathic myocarditis, acquired heart defects. Systemic vasculitis. Pathomorphology of systemic vasculitis: nonspecific aortoarteritis, nodular periarteritis, Wegener's granulomatosis, obliterating thromboangiitis. Pathological anatomy of acquired heart defects. Pathological anatomy of acquired (secondary) cardiomyopathies.

Topic 25. Practical skills: section "Diseases of the blood system and cardiovascular system. Diseases of the nervous system". Practicing of practical skills.

Content module 5.

Respiratory diseases. Diseases of digestive organs. Diseases of the endocrine system. Diseases of the genitourinary system. Diseases of the musculoskeletal system. Diseases of pregnancy and the postpartum period. Diseases of the pre- and perinatal period. Pathomorphology of hypo- and vitamin deficiency. Diseases caused by human activity and the influence of the external environment

Topic 26. Respiratory diseases. Morphological characteristics of acute bronchitis. Modern classification of pneumonia. Morphological characteristics and complications of acute focal pneumonia. Morphological characteristics and complications of lobar pneumonia. Morphological characteristics and complications of acute interstitial pneumonia. Morphological characteristics of acute destructive processes of the lungs. Definition and classification of chronic non-specific respiratory diseases. Morphological characteristics and complications of chronic bronchitis. Morphological characteristics of chronic obstructive emphysema. Morphological characteristics and complications of bronchiectasis. Morphological characteristics and complications of bronchial asthma. Morphological characteristics of idiopathic pulmonary fibrosis. Tumors of respiratory organs. Morphological characteristics of lung cancer.

Topic 27. Diseases of esophagus, stomach and intestines. Diseases of the esophagus: morphological characteristics. Morphological characteristics of chronic gastritis. Pathomorphology of ulcer disease. Complications of ulcer disease. Pathomorphology of non-specific ulcerative colitis. Pathomorphology of Crohn's disease. Clinical and morphological forms of appendicitis. Complications of appendicitis . Tumors of the gastrointestinal tract. Stomach cancer. Macroscopic and histological forms. Peculiarities of metastasis. Intestinal tumors. Tumors of the pancreas, morphological characteristics. Liver tumors. Liver cancer, morphological characteristics. Peritonitis, adhesion disease. Definition. Classification, morphological features.

Topic 28. Diseases of the liver, biliary system and pancreas. Morphological characteristics, prognosis of fatty hepatosis. Definition, morphological characteristics, prognosis of toxic liver dystrophy. Morphogenesis, forms, morphological characteristics of acute hepatitis. Morphological characteristics of chronic hepatitis, degree of activity and chronicity. Morphological characteristics of the most important types of cirrhosis. Pathomorphology of gallstone disease. Pathomorphology of acute and chronic cholecystitis. Morphological characteristics, complications of acute and chronic pancreatitis. Liver tumors.

Topic 29. Kidney diseases. Modern clinical and morphological classification of kidney diseases. Chronic glomerulonephritis: morphological characteristics, consequences. Classification, morphological manifestations of idiopathic nephrotic syndrome. Morphological manifestations of membranous nephropathy. Morphological characteristics, prognosis of necrotic nephrosis, tubulointerstitial nephritis,

acute and chronic pyelonephritis. Morphogenesis and morphological characteristics of nephrolithiasis, consequences Chronic renal failure. Nephrosclerosis.

Topic 30. Hypothalamic-pituitary disorders. Adrenal gland pathology. Pathology of the thyroid gland. Pathology of the endocrine apparatus of the pancreas. Morphological characteristics, complications and causes of death in Itsenko-Cushing's disease. Morphological characteristics, complications of acromegaly. Morphological characteristics of diabetes insipidus. Morphological characteristics of diabetes. Complications of diabetes mellitus: morphological characteristics of diabetic macro- and microangiopathy. Multinodular goiter. Morphological characteristics, complications, consequences. Graves' disease: morphological features of the thyroid gland, visceral manifestations. Hypothyroidism. Cretinism. Myxedema. Morphological characteristics. Definition, pathomorphology of Hashimoto's thyroiditis. Primary chronic insufficiency of the cortical substance of the adrenal glands (Addison's disease): morphological manifestations. Waterhouse-Friederiksen syndrome: morphological manifestations.

Topic 31. Pathomorphological changes in diseases related to nutrition. Vitamins Occupational diseases. Radiation sickness. Parathyroid osteodystrophy, osteomyelitis, fibrous dysplasia, osteopetrosis, Paget's disease, muscular dystrophies, myasthenia. Morphological characteristics of disturbed and insufficient nutrition. Pathological anatomy, consequences, causes of death in the case of injuries related to the influence of physical factors of the external environment: industrial noise, electromagnetic waves of radio frequencies, ionizing radiation, electric current, temperature effects. Morphological changes of bones in hyperparathyroid dystrophy. Morphological characteristics, complications of Paget's disease. Morphological characteristics, complications of fibrous dysplasia. Morphological characteristics, complications of osteomyelitis. Morphological characteristics, causes of death in Duchenne muscular dystrophy. Morphological characteristics, causes of death in myotonia.

Topic 32. Pathology of the female and male reproductive system. Breast disease. Morphological manifestations of inflammatory diseases of the endometrium and myometrium. Morphological manifestations of precancerous processes and tumors of the endometrium and myometrium. Morphological characteristics, complications, consequences of inflammatory diseases of the mammary glands. Morphological characteristics of fibrocystic changes of mammary glands. Morphological characteristics, complications, consequences of benign nodular hyperplasia of the prostate gland. Morphological characteristics of inflammatory diseases of the testicles.

Topic 33. Pre- and perinatal pathology. Pathology of pregnancy, postpartum period and placenta. Classification, morphological characteristics of ORH-gestoses. Classification, morphological characteristics and prognosis of trophoblastic disease. Morphological manifestations, impact on the fetus and the woman's body, consequences of infectious processes in the placenta. Morphological manifestations of blood circulation disorders in the placenta. Morphological characteristics, prediction of delay in intrauterine development of the fetus. Morphological characteristics of intrauterine infections of the fetus. Morphological characteristics of hemolytic disease of infants. Morphological characteristics of hemorrhagic disease of infants. Morphological characteristics, complications of pneumopathies. Morphological characteristics, consequences of non-infectious fetopathy: diabetic and alcoholic fetopathy. Classification and morphology of congenital malformations. Asphyxia of newborns. Birth trauma. Morphological characteristics, consequences of asphyxia. Birth injury: classification and morphology. Classification, morphological diagnosis, complications and consequences of ectopic pregnancy.

Topic 33. Practical skills: sections "Respiratory diseases. Diseases of digestive organs. Diseases of the endocrine system. Diseases of the genitourinary system. Diseases of the musculoskeletal system. Diseases of pregnancy and the postpartum period. Diseases of the pre- and perinatal period. Pathomorphology of hypo- and vitamin deficiency. Diseases caused by human activity and the influence of the external environment". Practicing of practical skills.

Content module 6.

Pathomorphology of infectious diseases.

Topic 35. General concepts of human infectious pathology. Classification of infectious diseases. Intestinal infectious diseases. Quarantine infections. Morphological characteristics, complications, consequences, causes of death in bacterial dysentery. Morphological characteristics, complications, consequences, causes of death in typhoid fever, salmonellosis. Quarantine infections. Cholera: clinical and morphological forms, complications, causes of death. Plague: clinical and morphological forms, complications, causes of death.

Topic 36. Viral airborne infections. Corona virus disease. HIV infection and AIDS. Rabies. COVID-19. Morphological characteristics, complications, consequences, causes of death in respiratory viral infections, coronavirus disease, HIV infection, rabies. Rickettsioses. Prion infections. Morphological characteristics, complications, consequences, causes of death in typhoid fever. Morphological characteristics, complications of prion lesions of the central nervous system. Morphological characteristics, complications, causes of death in AIDS. COVID-19.

Topic 37. Childhood infections. Morphological characteristics, complications, consequences, causes of death in scarlet fever. Morphological characteristics, complications, consequences, causes of death in diphtheria. Morphological characteristics, complications, consequences, causes of death in whooping cough.

Topic 38. Tuberculosis. Tissue reactions in tuberculosis. Pathological anatomy of primary tuberculosis complex. Morphology of progression of primary tuberculosis. Pathological anatomy of the chronic course of primary tuberculosis. Morphological characteristics, complications, consequences, causes of death in hematogenous tuberculosis with predominant lung damage. Morphological characteristics, complications, consequences, causes of death in secondary tuberculosis. Modern pathomorphosis of tuberculosis.

Topic 39. Sepsis. Syphilis. Helminth infections. Mycoses. Clinical and anatomical forms of sepsis: septicemia, septicopyemia, septic (infectious) endocarditis. Pathomorphology of congenital syphilis. Pathomorphology of acquired syphilis. Diseases caused by protozoa, helminths. Mycoses. Morphological characteristics, complications, consequences, causes of death in diseases caused by protozoa: malaria, balantidiasis, amebiasis. Morphological characteristics, complications, consequences, causes of death in diseases caused by helminths: trichinellosis, echinococcosis, cysticercosis, opisthorcosis, schistosomiasis.

Topic 40 . Practical skills: section "Pathomorphology of infectious diseases". Practicing of practical skills.

Topic 41. Test control of knowledge. Overview and description of micro and macro preparetions. Preparation for the exam.

List of recommended literature:

Basic:

1. Essentials of pathology: textbook / Ya. Bondar, A.Romanyuk, V.Voloshyn, V. Gargin – Kharkiv, "Planeta-Print" Ltd, 2020, 219p.
2. Pathology: textbook / S.V. Sorokina,V.D. Markovskyi, D.I. Halata et al.; edited by S.V. Sorokina,V.D. Markovskyi, D.I. Halata.- 2-nd edition.- Kyiv : AUS Medicine Publishing, 2020. – 328p.+2 colour inserts (8p. + 12p.)
3. Pathology: textbook / S.V. Sorokina,V.D. Markovskyi, D.I. Halata et al.; edited by S.V. Sorokina,V.D. Markovskyi, D.I. Halata. – Kyiv : AUS Medicine Publishing, 2019. – 328p.+2 colour inserts (8p. + 12p.)

Additional:

1. Kumar V. Robbins Basic Pathology. 9th Edition / Vinay Kumar, Abul Abbas, Jon Aster. – Elsevier. – 2015. – 952 p.

ASSESSMENT

Current control: oral survey, testing, assessment of performance of practical skills, solution of situational pathomorphological tasks, assessment of activity in class. Means of diagnosing the level of training of higher education applicants: solving test tasks from the basis of the KROC licensed exam; procedurally structured control of practical skills and abilities (assessment of knowledge and ability to analyze and interpret macro- and microscopic changes in cells, tissues, organs and systems during certain pathological processes); interview.

Final control : exam.

The exam is a form of final control that takes place as a separate control measure. Exams are taken by examiners who are approved at the department meeting and submitted to the University's educational department.

Exams are taken by applicants: during the examination sessions at the end of the spring semester according to the schedule. The methodology of final control of the educational component in the form of an exam is unified and involves the use of standardized forms.

About the evaluation of the current educational activity in a practical session

When assessing the mastery of each topic, a student of higher education is given grades on a 4-point (traditional) scale ("2", "3", "4", "5").

1. **Evaluation of theoretical knowledge on the subject of the lesson:**
   - methods: survey, solving a situational clinical problem, tests
   - the maximum score is 5, the minimum score is 3, the unsatisfactory score IS 2 .
2. **Assessment of practical skills on the topic of the lesson:**
   - methods: assessment of the correctness of the performance of practical skills
   - the maximum score is 5, the minimum score is 3, the unsatisfactory score IS 2.

The grade for one practical session is the arithmetic average of all components and can only have a whole value (5, 4, 3, 2), which is rounded according to the statistical method.

Current assessment criteria for practical training:

Rating	Evaluation criteria
"5"	The applicant knows the program in its entirety , illustrating the answers with various examples; gives exhaustively accurate and clear answers without any leading questions; teaches the material without errors and inaccuracies; performs practical tasks of varying degrees of complexity (solves situational clinical problems, tests, knows how to diagnose pathological processes in organs and tissues according to the algorithm).
"4"	The student knows the entire program and understands it well, answers the questions correctly, consistently and systematically, but they are not exhaustive, although the student answers additional questions without mistakes; performs practical tasks, feels difficulties only in the most difficult cases (orients himself within the limits of the above-mentioned issues and knows how to diagnose pathological processes in organs and tissues according to the algorithm);
"3"	It is given to the applicant on the basis of his knowledge of the entire scope of the program on the subject and a satisfactory level of understanding of it. The applicant is able to solve simplified tasks with the help of leading questions; performs practical skills, experiencing difficulties in simple cases; he is not able to systematically answer on his own, but he answers correctly to

	directly asked questions (he has a superficial idea of pathological conditions and does not know how to diagnose pathological processes in organs and tissues according to an algorithm).
"2"	The acquirer does not have the material, does not know any of the above questions, or knows less than 50% of the questions and does not know how to diagnose pathological processes in organs and tissues according to the algorithm.

Only those applicants who have fulfilled the requirements of the training program in the discipline, have no academic debt, their average score for the current educational activity in the discipline is at least 3.00, and they have passed the test control according to the tests "STEP - 1" are admitted to the final control in the form of an exam. » at least 90% (50 tasks). The test control of the "STEP-1" tests is conducted in the Educational and Production Complex of Innovative Technologies of Learning, Informatization and Internal Monitoring of the Quality of Education of the University in the last class before the exam.

Evaluation of the independent work of a student of higher education. The independent work of a student of higher education, which is provided by the topic of the lesson along with the classroom work, is evaluated during the current control of the topic in the corresponding lesson. The mastery of topics that are assigned only to independent work is checked during the final control.

Evaluation of learning results during the final control (exam)

The content of the evaluated activity	Scores
The answer to a theoretical question.	1
The answer to a theoretical question.	1
The answer to a theoretical question.	1
Practical task: diagnosis of pathology in a micropreparation	1
Practical task: description and diagnosis of pathology in macropreparation	1

The method of final control in the form of an exam is unified and involves the use of standardized forms. The number of questions (130) that are submitted to the exam corresponds to the amount of credits (7) assigned to the study of the academic discipline.

The form of the examinational card is standardized and consists of structural elements (components): theoretical questions (3) and practical tasks (2) (diagnosis of pathology in a micropreparation and description and diagnosis of pathology in a macropreparation). Theoretical questions are short, simple, understandable, clear and transparent, a complete answer to one theoretical question lasts no more than 5 minutes. Practical tasks are clearly and clearly formulated, a complete answer to one practical question lasts no more than 5 minutes. The timing of the exam is standard - no more than 30 minutes.

For each card, a check list (answer standard) is drawn up, which provides full correlation with the card, contains a similar number of structural elements (components), has answer standards, which are mandatory for providing complete answers to the questions.

During the exam, the applicant receives a card, and the examiners use a checklist for the corresponding ticket with standard answers and determine which mandatory components of the answer were named or not named by the applicant.

The overall grade for the exam is calculated as the arithmetic average of all grades obtained for answers to theoretical questions and practical tasks on a traditional four-point scale, rounded to two decimal places .

The exam is held in the educational and production complex of innovative technologies of learning, informatization and internal monitoring of the quality of education of the University during the examination sessions at the end of the semester (autumn and spring) according to the schedule.

Distribution of points received by students of higher education

The obtained average score for the academic discipline for applicants who have successfully mastered the work program of the academic discipline is converted from a traditional four-point scale to points on a 200-point scale, as shown in the table:

Conversion table of a traditional assessment into a multi-point scale

National assessment for discipline	The sum of points for the discipline
Excellent ("5")	185 - 200
Good ("4")	151 - 184
Satisfactory ("3")	120-150
Unsatisfactory ("2")	Below 120

Multi-point scale (200-point scale) characterizes the actual success of each applicant in mastering the educational component. The conversion of the traditional grade (average score for the academic discipline) into a 200-point grade is performed by the information and technical department of the University.

According to the obtained points on a 200-point scale, the achievements of the applicants are evaluated according to the ECTS rating scale. Further ranking according to the ECTS rating scale allows you to evaluate the achievements of students from the educational component who are studying in the same course of the same specialty, according to the points they received.

The ECTS scale is a relative-comparative rating, which establishes the applicant's belonging to the group of better or worse among the reference group of fellow students (faculty, specialty). An "A" grade on the ECTS scale cannot be equal to an "excellent" grade, a "B" grade to a "good" grade, etc. When converting from a multi-point scale, the limits of grades "A", "B", "C", "D", "E" according to the ECTS scale do not coincide with the limits of grades "5", "4", "3" according to the traditional scale. Acquirers who have received grades of "FX" and "F" ("2") are not included in the list of ranked acquirers. The grade "FX" is awarded to students who have obtained the minimum number of points for the current learning activity, but who have not passed the final examination. A grade of "F" is given to students who have attended all classes in the discipline, but have not achieved a grade point average (3.00) for the current academic activity and are not admitted to the final examination.

Applicants who study in one course (one specialty), based on the number of points scored in the discipline, are ranked on the ECTS scale as follows:

Conversion of the traditional grade from the discipline and the sum of points on the ECTS scale

Evaluation on the ECTS scale	Statistical indicator

A	Top 10% achievers
B	The next 25% of earners
C	The next 30% of earners
D	The next 25% of earners
E	The next 10% of earners

INDEPENDENT WORK OF STUDENTS OF HIGHER EDUCATION

Independent work involves preparation for each practical session.

POLICY OF EDUCATIONAL DISCIPLINE

Deadlines and Rescheduling Policy :

- Absences of classes for non-respectable reasons will be worked out according to the schedule of the teacher on duty.
- Absences for valid reasons are worked out according to an individual schedule with the permission of the dean's office.

Academic Integrity Policy :

Applicants must observe academic integrity, namely:

- independent performance of all types of work, tasks, forms of control provided for by the work program of this educational discipline;
- references to sources of information in case of use of ideas, developments, statements, information;
- compliance with the legislation on copyright and related rights;
- provision of reliable information about the results of one's own educational (scientific) activity, used research methods and sources of information.

Unacceptable in educational activities for participants of the educational process are:

- the use of family or official ties to obtain a positive or higher grade during any form of control of academic performance or academic merit;
- use of prohibited auxiliary materials or technical means (cheat sheets, notes, micro-earphones, telephones, smartphones, tablets, etc.) during control measures;
- going through procedures for monitoring the results of training by fake persons.

For violation of academic integrity, students may be held to the following academic responsibility:

- decrease in the results of assessment of practical skills, assessment in class, credit, etc.;
- retaking the assessment (practical skills, credit, etc.);
- appointment of additional control measures (additional individual tasks, practical skills, tests, etc.);
- conducting an additional inspection of other works authored by the violator.

Attendance and Tardiness Policy:

Uniform: a medical gown that completely covers the outer clothing, or medical pajamas, a cap, a mask, and a change of shoes.

Equipment: notebook, pen.

State of health: applicants suffering from acute infectious diseases, including respiratory diseases, are not allowed to attend classes.

An applicant who is late for a class can attend it, but if the teacher put " ab " in the

journal, he must complete it in the general order.

Use of mobile devices:

Mobile devices may be used by students with the permission of the instructor if they are needed for the assignment.

Behavior in the audience:

The behavior of applicants and teachers in the classrooms should be working and calm, strictly responsible rules, installed Regulations on academic integrity and ethics of academic relations at Odesa National Medical University, in accordance with the Code of Academic Ethics and University Community Relations of Odesa National Medical University, Regulations on prevention and detection of academic plagiarism in research and educational work of students of higher education, scientists and teachers of Odessa National Medical University.

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