


**Syllabus of the discipline «Pathomorphology»**

<b>1. General information</b>	
<b>Faculty</b>	<b>Faculty of Foreign students</b>
<b>Educational program</b>	22 Public health, 222 Medicine, second (master's) level of higher education, full-time
<b>Academic year</b>	2023-2024
<b>Discipline, code</b>	«Pathomorphology», code OK 14
<b>Department</b>	Department of pathologic anatomy and forensic medicine 790010, Lviv, Pekarska str. 52 phone: +380322769371 Kaf_pathanatomy@meduniv.lviv.ua
<b>Head of the department</b>	DMSc., professor Pospishil Yu.O.
<b>Year of study</b>	3 <sup>rd</sup> year of study
<b>Semester</b>	During V and VI semesters
<b>Type of discipline</b>	<b>Obligatory</b>
<b>Teachers</b>	O.M.Gavrilyuk, MD, DMSc, Associate Professor – <a href="mailto:e.m.gavrilyuk@gmail.com">e.m.gavrilyuk@gmail.com</a> V.I.Vovk, MD, PhD, Associate Professor – <a href="mailto:vovkvi@yahoo.com">vovkvi@yahoo.com</a> M.I.Servetnyk, MD, PhD, Associate Professor – <a href="mailto:doctorservetnyk@gmail.com">doctorservetnyk@gmail.com</a> I.V.Hritsyna, MD, PhD, Associate Professor – <a href="mailto:hritsyna@gmail.com">hritsyna@gmail.com</a> Ju.I.Kuzyk, MD, DMSc, Associate Professor - <a href="mailto:juliakuzyk21@gmail.com">juliakuzyk21@gmail.com</a>
<b>Erasmus yes/no</b>	No
<b>Особа, відповідальна за силабус</b>	O.M.Gavrilyuk, MD, DMSc, Associate Professor – <a href="mailto:e.m.gavrilyuk@gmail.com">e.m.gavrilyuk@gmail.com</a>
<b>Amount of credits ECTS</b>	<b>7,0</b>
<b>Hours</b>	Total – <b>210</b> h. Lectures – <b>34</b> h. Practical classes – <b>70</b> h. SRW – <b>106</b> h.
<b>Language of study</b>	<b>English</b>
<b>Information for consultation</b>	According to approved schedule
<b>Address, phone and working regulations of the clinical base, bureau</b>	Lviv Region Pathological Anatomy Bureau 79010, Lviv, Pekarska str.,52 phone/ fax: +38032275-74-08 E-mail: <a href="mailto:lopab@ukr.net">lopab@ukr.net</a> Head: Varyvoda Olena, phone number +38032275-74-08 Located on the territory of the Department of Pathological Anatomy

## 2. Short Annotation of the Course

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

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

The study of the structural basis of human diseases consists of two sections: **general and clinical pathomorphology (special pathological anatomy) and thanatology**. **General pathomorphology** lays the understanding of the structural foundations of cell-organ pathology - typical general pathological processes, the set of which determines the morpho-functional manifestations of certain diseases. **Special (clinical) pathomorphology** provides knowledge of the structural basis of human diseases and their clinical manifestations, recovery, complications and consequences; knowledge of changes in diseases that develop in connection with changes in human living conditions and the environment (pathomorphosis); knowledge of diseases arising as a result of various medical measures - preventive, diagnostic, curative, cosmetic, anesthesiological, resuscitation (pathology of therapy, resuscitation pathology, iatrogenic). **Thanatology** lays down knowledge about the causes, mechanisms and types of death of patients, on which modern advanced intensive care is based.

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

**The subject of study of the discipline** is the structural basis of human diseases, knowledge of which is necessary for in-depth mastering of the fundamentals of medicine and clinical picture of diseases with the subsequent use of knowledge in the practice of medicine.

**Interdisciplinary links:** the study of the discipline is based on the knowledge gained by students in the courses of medical biology, anatomy, histology and embryology, biological chemistry, microbiology and virology is integrated with these disciplines; lays the foundations for students to study physiology, biochemistry, pathological physiology, propaedeutics of clinical disciplines, which involves the integration of teaching with these disciplines and the formation of skills to apply the acquired knowledge of pathomorphology in further study and future professional activities.

## 3. Aim and Objectives of the Course

**1. The purpose of teaching the discipline "Pathomorphology"** is to study the etiology, pathogenesis, microscopic and ultramicroscopic changes of organs and tissues of the human body in various living conditions, which provides:

- ✓ study of typical general pathological processes, the set of which determines the morphological manifestations of diseases,
- ✓ study of the structural basis of the development of diseases and their clinical manifestations, the structural basis of recovery, complications and consequences,
- ✓ study of methods of pathomorphological research: autopsy, biopsy, research of biopsy material, experimental modeling of diseases.

**2. The main tasks of studying the discipline "Pathomorphology" are the following:**

- ✓ understanding the basics of cell pathology and general pathological processes, the set of which determines the morphological manifestations of certain diseases;
- ✓ knowledge of morphology of diseases at different stages of their development

- (morphogenesis), structural bases of recovery, complications and consequences of diseases;
- ✓ study of variants of pathomorphosis of diseases that occur in connection with human living conditions, change as a result of various therapeutic measures (pathology of therapy);
- ✓ comparison of morphological and clinical manifestations of diseases at all stages of their development;
- ✓ acquisition of skills of clinical and anatomical analysis, synthetic generalization of diagnostic signs of diseases and their correct interpretation in causal relations.

### 3. Competences and results of studying of the discipline "Pathomorphology"

In accordance with the requirements of the Standard of Higher Education, the discipline provides students with the acquisition of **competencies**:

- **integrated**: the ability to solve complex problems, including those of a research and innovation nature in the field of medicine; the ability to continue learning with a high degree of autonomy.
- **general**:
  - ability to abstract thinking, analysis and synthesis;
  - ability to learn and master modern knowledge;
  - ability to apply knowledge in practical situations;
  - knowledge and understanding of the subject field and understanding of professional activity;
  - ability to adapt and act in a new situation;
  - ability to make informed decisions;
  - ability to work in a team;
  - ability for interpersonal interaction;
  - ability to communicate in a foreign language;
  - ability to use information and communication technologies;
  - ability to search, process and analyze information from various sources;
  - determination and perseverance regarding the assigned tasks and assumed duties;
  - awareness of equal opportunities and gender issues;
  - the ability to preserve and multiply the moral, cultural, scientific values and achievements of society based on an understanding of the history and patterns of development of the subject area, its place in the general system of knowledge about nature and society and in the development of society, technology and technologies, to use different types and forms of motor activity for active recreation and leading a healthy lifestyle.
- **special (professional, subject)**:
  - ability to collect medical information about the patient and analyze clinical data;
  - ability to determine the necessary list of laboratory and instrumental studies and evaluate their results;
  - ability to establish a preliminary and clinical diagnosis of the disease;
  - ability to develop and implement scientific and applied projects in the field of health care;
  - compliance with ethical principles when working with patients and laboratory animals;
  - observe professional and academic integrity, bear responsibility for the reliability of the obtained scientific results.

### 4. Prerequisites of the course

To successfully study and master the competencies of the discipline "Pathomorphology", the student must have knowledge of the following disciplines:

1. Human anatomy
2. Histology, cytology and embryology
3. Medical biology, parasitology and genetics
4. Physiology
5. Biological chemistry

6. Microbiology, virology and immunology  
7. Pathological physiology

### 5. Programmed results of studying

#### Program learning outcomes (PLO) – (IIPH)

<b>PLO1 (IIPH1)</b>	To have thorough knowledge of the structure of professional activity. To be able to carry out professional activities that require updating and integration of knowledge. To be responsible for professional development, the ability for further professional training with a high level of autonomy	<b>GC1, GC2, GC3, GC4, GC6 PC1</b>
<b>PLO2 (IIPH2)</b>	Understanding and knowledge of fundamental and clinical biomedical sciences at a level sufficient for solving professional tasks in the field of health care	<b>GC1, GC2, GC3, GC4, GC5 PC1, PC2, PC3</b>
<b>PLO3 (IIPH3)</b>	Specialized conceptual knowledge, which includes scientific achievements in the field of health care and is the basis for conducting research, critical understanding of problems in the field of medicine and related interdisciplinary problems	<b>GC1, GC2, GC3, GC4 PC23, PC24, PC25</b>
<b>PLO7 (IIPH7)</b>	To prescribe and to analyze additional (mandatory and additional) examination methods (laboratory, functional and/or instrumental) for patients with diseases of organs and body systems for differential diagnosis	<b>GC1, GC2, GC3 PC1, PC2, PC3</b>
<b>PLO21 (IIPH21)</b>	To find the necessary information in the professional literature and databases of other sources, analyze, evaluate and adequately apply this information	<b>GC1, GC10, GC11 PC3</b>
<b>PLO23 (IIPH23)</b>	To assess the impact of the environment on human health to assess population morbidity	<b>GC6, GC12 PC3</b>
<b>PLO27 (IIPH27)</b>	To communicate freely in the national and English languages both orally and in writing to discuss professional activities, research and projects	<b>GC9 PC23</b>
<b>PLO28 (IIPH28)</b>	To make effective decisions about health care problems, evaluate the necessary resources, take into account social, economic and ethical consequences	<b>GC3, GC6, GC7, GC8, GC13, GC15</b>

#### The Student has to know:

3H-1	Etiology, pathogenesis, macro- and microscopic manifestations of various alteration processes, their consequences and possible complications.
3H-2	Etiology, pathogenesis, macro- and microscopic manifestations of various circulatory and lymphatic disorders, their consequences and possible complications.
3H-3	Etiology, pathogenesis, macro- and microscopic manifestations of types of inflammation, their consequences and probable complications.
3H-4	Etiology, pathogenesis, macro- and microscopic manifestations of different variants of immunopathological processes, their consequences and probable complications.

3H-5	Etiology, pathogenesis, macro- and microscopic manifestations of different types of adaptation, their consequences and probable complications.
3H-6	Etiology, pathogenesis, macro- and microscopic manifestations of wound healing options, their consequences and probable complications.
3H-7	Basic provisions of oncogenesis, physical, chemical and viral carcinogenesis, general morphological characteristics of neoplastic process, variants of tumor growth and metastasis, basic provisions of tumor progression, paraneoplastic syndrome, basic classifications of tumors, systems of staging and gradation of tumors, consequences of their local and general impact , methods of morphological diagnosis and verification of tumors of different histogenesis
3H-8	Macro- and microscopic manifestations of epithelial organ-nonspecific and organ-specific tumors
3H-9	Macro- and microscopic manifestations of tumors of mesenchymal origin
3H-10	Macro- and microscopic manifestations of tumors of neuroectodermal origin
3H-11	Macro- and microscopic manifestations of tumors of hematopoietic and lymphoid tissues (leukemia and lymphoma)
3H-12	Basic provisions on nosology, definition of the concept of "diagnosis", variants of diagnoses, principles of construction of clinical and pathological diagnoses, the concept of pathomorphosis..
3H-13	Etiology, pathogenesis, macro- and microscopic manifestations of diseases of the blood system, their consequences and possible complications.
3H-14	Etiology, pathogenesis, macro- and microscopic manifestations of diseases of the cardiovascular system, their main clinical manifestations, consequences and possible complications.
3H-15	Etiology, pathogenesis, macro- and microscopic manifestations of respiratory diseases, their main clinical manifestations, consequences and possible complications.
3H-16	Etiology, pathogenesis, macro- and microscopic manifestations of diseases of the gastrointestinal tract, their main clinical manifestations, consequences and possible complications.
3H-17	Etiology, pathogenesis, macro- and microscopic manifestations of diseases of the hepatobiliary system and pancreas, their main clinical manifestations, consequences and possible complications.
3H-18	Etiology, pathogenesis, macro- and microscopic manifestations of kidney diseases, their main clinical manifestations, consequences and possible complications.
3H-19	Etiology, pathogenesis, macro- and microscopic manifestations of diseases of the endocrine system, their main clinical manifestations, consequences and possible complications.
3H-20	Etiology, pathogenesis, macro- and microscopic manifestations of diseases of male and female genitals, pregnancy and postpartum period, their main clinical manifestations, consequences and possible complications.
3H-21	Etiology, pathogenesis, macro- and microscopic manifestations of pre- and perinatal pathology, the main clinical manifestations, consequences and possible complications.
3H-22	Etiology, pathogenesis, macro- and microscopic manifestations of diseases of the central and peripheral nervous system, their main clinical manifestations, consequences and possible complications.
3H-23	Etiology, pathogenesis, macro- and microscopic manifestations of diseases of the musculoskeletal and muscular systems, their main clinical manifestations, consequences and possible complications
3H-24	Basic provisions on the infectious process and infectious disease, etiology, pathogenesis, macro- and microscopic manifestations of infectious diseases of the gastrointestinal tract caused by various microbiological pathogens, their main clinical manifestations, consequences and possible complications.
3H-25	Etiology, pathogenesis, macro- and microscopic manifestations of bacterial infectious diseases transmitted by aerosol, their main clinical manifestations, consequences and possible complications.
3H-26	Etiology, pathogenesis, macro- and microscopic manifestations of viral infectious diseases transmitted by aerosol, their main clinical manifestations, consequences and possible complications.
3H-27	Etiology, pathogenesis, macro- and microscopic manifestations of childhood infectious diseases, their main clinical manifestations, consequences and possible complications.
3H-28	Etiology, pathogenesis, macro- and microscopic manifestations of infectious diseases that are accompanied by multi-organ lesions (sepsis, umbilical sepsis, tuberculosis, HIV / AIDS), their main clinical manifestations, consequences and possible complications.
3H-29	Skin diseases: terminology that reflects skin pathology; inflammatory and vesicular skin diseases; diseases accompanied by pigmentation disorders: albinism, vitiligo, nevi; other diseases: keratoacanthoma, dermatofibroma, epidermal cysts, hemangiomas, fibro-epithelial lesions; colloid; malignant skin tumors: skin cancer, basal cell carcinoma, melanoma.
3H-30	Etiology, pathogenesis, macro- and microscopic manifestations of nutrition-related diseases, occupational diseases, iatrogenic drug pathology, their main clinical manifestations, consequences and possible complications.
3H-31	Etiology, pathogenesis, macro- and microscopic manifestations of diseases caused by rickettsiae, protozoa (malaria, balantidiasis, amebiasis), fungi, their main clinical manifestations, consequences and possible complications.
<b>The student must be able to:</b>	

Y <sub>M</sub> -1	Diagnose macro- and microscopic manifestations of various alteration processes, determine their consequences and possible complications.
Y <sub>M</sub> -2	Diagnose macro- and microscopic manifestations of various circulatory and lymphatic disorders, determine their consequences and possible complications.
Y <sub>M</sub> -3	Diagnose macro- and microscopic manifestations of inflammation, determine their consequences and probable complications.
Y <sub>M</sub> -4	Diagnose macro- and microscopic manifestations of different variants of immunopathological processes, determine their consequences and probable complications.
Y <sub>M</sub> -5	Diagnose macro- and microscopic manifestations of different types of adaptation, determine their consequences and probable complications.
Y <sub>M</sub> -6	Diagnose macro- and microscopic manifestations of wound healing options, determine their consequences and probable complications.
Y <sub>M</sub> -7	Diagnose macro- and microscopic manifestations of epithelial organ-nonspecific and organ-specific tumors, determine their consequences and probable complications.
Y <sub>M</sub> -8	Diagnose macro- and microscopic manifestations of tumors of mesenchymal origin, determine their consequences and probable complications.
Y <sub>M</sub> -9	Diagnose macro- and microscopic manifestations of tumors of neuroectodermal origin, determine their consequences and probable complications.
Y <sub>M</sub> -10	Diagnose macro- and microscopic manifestations of tumors of hematopoietic and lymphoid tissues (leukemias and lymphomas), determine their consequences and probable complications.
Y <sub>M</sub> -11	Diagnose macro- and microscopic manifestations of diseases of the blood system, their consequences and possible complications.
Y <sub>M</sub> -12	Diagnose macro- and microscopic manifestations of diseases of the cardiovascular system, determine their main clinical manifestations, consequences and possible complications.
Y <sub>M</sub> -13	Diagnose macro- and microscopic manifestations of respiratory diseases, determine their main clinical manifestations, consequences and possible complications.
Y <sub>M</sub> -14	Diagnose macro- and microscopic manifestations of diseases of the gastrointestinal tract, determine their main clinical manifestations, consequences and possible complications.
Y <sub>M</sub> -15	Diagnose macro- and microscopic manifestations of diseases of the hepatobiliary system and pancreas, establish their main clinical manifestations, consequences and possible complications.
Y <sub>M</sub> -16	Diagnose macro- and microscopic manifestations of kidney disease, determine their main clinical manifestations, consequences and possible complications.
Y <sub>M</sub> -17	Diagnose macro- and microscopic manifestations of diseases of the endocrine system, find out their main clinical manifestations, consequences and possible complications.
Y <sub>M</sub> -18	Diagnose macro- and microscopic manifestations of diseases of the male and female genitals, pregnancy and postpartum, their main clinical manifestations, consequences and possible complications.
Y <sub>M</sub> -19	Diagnose macro- and microscopic manifestations of pre- and perinatal pathology, determine the main clinical manifestations, consequences and possible complications of these diseases.
Y <sub>M</sub> -20	To determine macro- and microscopic manifestations of diseases of the central and peripheral nervous system, to diagnose their main clinical manifestations, consequences and possible complications.
Y <sub>M</sub> -21	Diagnose macro- and microscopic manifestations of diseases of the musculoskeletal and muscular systems, identify their main clinical manifestations, consequences and possible complications.
Y <sub>M</sub> -22	Diagnose macro- and microscopic manifestations of infectious diseases of the gastrointestinal tract caused by various microbiological pathogens, their main clinical manifestations, consequences and possible complications.
Y <sub>M</sub> -23	Diagnose macro- and microscopic manifestations of bacterial infectious diseases transmitted by aerosol, to determine their main clinical manifestations, consequences and possible complications.
Y <sub>M</sub> -24	Diagnose macro- and microscopic manifestations of viral infectious diseases transmitted by aerosol, to determine their main clinical manifestations, consequences and possible complications.
Y <sub>M</sub> -25	Diagnose macro- and microscopic manifestations of children's infectious diseases, their main clinical manifestations, determine the consequences and possible complications.
Y <sub>M</sub> -26	Diagnose macro- and microscopic manifestations of infectious diseases that are accompanied by multi-organ lesions (sepsis, tuberculosis, HIV / AIDS), their main clinical manifestations, consequences and possible complications.
Y <sub>M</sub> -27	Diagnose macro- and microscopic signs of inflammatory and vesicular skin diseases, diseases accompanied by pigmentation disorders: albinism, vitiligo, nevi; other diseases: keratoacanthoma, dermatofibroma, epidermal cysts, hemangiomas, fibro-epithelial lesions; keloid; malignant skin tumors: skin cancer, basal cell carcinoma, melanoma; use terminology that reflects skin pathology.
Y <sub>M</sub> -28	Diagnose macro- and microscopic manifestations of nutrition-related diseases, occupational diseases, iatrogenic drug pathology, identify their main clinical manifestations, consequences and possible complications.
Y <sub>M</sub> -29	Diagnose macro- and microscopic manifestations of diseases caused by rickettsiae, protozoa

	(malaria, balantidiasis, amebiasis), fungi, identify their main clinical manifestations, consequences and possible complications.
K-1	Ability to solve typical and complex specialized problems and practical problems in the learning process, which involves research and / or innovation and is characterized by the complexity and uncertainty of conditions and requirements
K-2	Ability to apply knowledge of pathomorphology in practical situations; ability to choose communication strategy; ability to work in a team; interpersonal skills; ability to communicate in the state language both orally and in writing; ability to communicate in another language; skills of using information and communication technologies; ability to abstract thinking, analysis and synthesis, ability to learn and be modernly trained; ability to evaluate and ensure the quality of work performed; determination and persistence in the tasks and responsibilities.
K-3	Ability to master the methods of pathomorphological research: autopsy, biopsy, experimental modeling of diseases; ability to analyze the morphological manifestations of diseases, the ability to evaluate the results of autopsy, biopsy and sectional material; ability to analyze the structural basis of the development of diseases and their clinical manifestations, the structural basis of recovery, complications and consequences.
AB-1	Independently plan and conduct research
AB-2	Take personal responsibility for the results of your own professional activities
AB-3	Adhere to generally accepted norms of behavior and morality in interpersonal relationships

### 6. Format and scope of discipline

Format of Discipline	Очный	
Type of lessons	Amount of hours	Amount of groups
<b>Lectures</b>	<b>34</b>	38 – national students 11 – foreign English speaking students
<b>Practice</b>	<b>70</b>	-<<-
<b>Self-reliant study</b>	<b>106</b>	-<<-

### 7. Topics and content of the discipline

Types of educational activities of students according to the curriculum are: a) lectures, b) practical classes, c) independent work of students (VTS).

The topics of the lecture course reveal the problematic issues of the relevant sections of pathomorphology.

Practical classes include:

- 1) research by students of macroscopic changes of the affected isolated organs and systems at the general pathological processes and diseases of systems of bodies;
- 2) research by students of microscopic changes of the affected cells, tissues and organs at the general pathological processes and diseases of systems of bodies;
- 3) solving situational problems (assessment of morphological changes in various pathological processes) that have a clinical and anatomical direction.

In the practical lesson, students study and draw microslides, mark the most characteristic microscopic changes of tissues and cells in certain pathological processes.

Classes organization system:

Practical classes are hold in the form of interactive communication between teacher and students. In order to prepare for the practical lesson the student must:

- 1) listen to and process a lecture on the topic of the lesson;
- 2) to study theoretical material using textbooks, manuals and other available sources;
- 3) fill in the proposed diagrams, tables, figures in the workbook.

Approximate lesson plan:

1. Formulation of the purpose and the purposes of employment by the teacher.
2. Interactive discussion of the topic in the form of a discussion, which includes information presented in tables, diagrams, drawings, completed by the student independently, with mandatory review and study of micro-and micro-drugs on the topic of the lesson.
3. If possible, a demonstration autopsy of the body of the deceased.
4. Final control of the lesson material, which includes assessment of independent work, oral answers and test control of theoretical knowledge.

Code of the type of lesson	Topic	Content of study	Code of the result of study	Teacher
<b>Chapter 1. General Pathomorphology</b>				

<b>L-1 (lecture 1)</b>	Subject and tasks of pathomorphology. Methods of pathomorphological research. General information about pathogenic factors and types of cellular reactions to them. Morphology of reversible and irreversible acute damage. Necrosis, apoptosis.	Discussion and detailing of the lecture topic with the help of a multimedia presentation	3H-1	According to approved schedule
<b>L-2</b>	Chronic injury. The concept of "dystrophy". Intracellular and extracellular accumulations. Connective tissue disorganization.	Discussion and detailing of the lecture topic with the help of a multimedia presentation	3H-1	According to approved schedule
<b>L-3</b>	Circulatory disorders.	Discussion and detailing of the lecture topic with the help of a multimedia presentation	3H-2	According to approved schedule
<b>L-4</b>	Protective mechanisms and their morphological equivalents. Nonspecific and specific protection. General doctrine of inflammation. Morphology of exudative and productive inflammation. Acute and chronic inflammation.	Discussion and detailing of the lecture topic with the help of a multimedia presentation	3H-3	According to approved schedule
<b>L-5</b>	Immunopathological processes. Pathomorphology of immunopathological processes	Discussion and detailing of the lecture topic with the help of a multimedia presentation	3H-4	According to approved schedule
<b>L-6</b>	Compensation and adaptation processes. Regeneration and reparation. Sclerosis.	Discussion and detailing of the lecture topic with the help of a multimedia presentation	3H-5,6	According to approved schedule
<b>L-7</b>	General doctrine of tumors. Morphological features of tumors of the epithelium.	Discussion and detailing of the lecture topic with the help of a multimedia presentation	3H-7,8	According to approved schedule
<b>L-8</b>	Nomenclature and morphological features of tumors of mesenchymal and neuroectodermal origin. Hematopoietic tumors	Discussion and detailing of the lecture topic with the help of a multimedia presentation	3H-9,10,11	According to approved schedule
<b>L-9</b>	Introduction to nosology. Pathology of the cardiovascular system.	Discussion and detailing of the lecture topic with the help of a multimedia presentation	3H-12,13,14	According to approved schedule
<b>Chapter 2. Special pathomorphology</b>				
<b>L-10</b>	Diseases of respiratory system.	Discussion and detailing of the	3H-15	According to approved schedule



		lecture topic with the help of a multimedia presentation		
<b>L-11</b>	Diseases of digestive system organs	Discussion and detailing of the lecture topic with the help of a multimedia presentation	3H-16	According to approved schedule
<b>L-12</b>	Disease of liver, biliary system and pancreas	Discussion and detailing of the lecture topic with the help of a multimedia presentation	3H-17	According to approved schedule
<b>L-13</b>	Renal diseases	Discussion and detailing of the lecture topic with the help of a multimedia presentation	3H-18	According to approved schedule
<b>L-14</b>	Diabetes mellitus. Diseases of thyroid gland.	Discussion and detailing of the lecture topic with the help of a multimedia presentation	3H-19	According to approved schedule
<b>L-15</b>	Diseases of nervous and muscular-skeletal systems	Discussion and detailing of the lecture topic with the help of a multimedia presentation	3H-22,23	According to approved schedule
<b>L-16</b>	Infectious diseases. General characteristic of infectious process.	Discussion and detailing of the lecture topic with the help of a multimedia presentation	3H-24	According to approved schedule
<b>L-17</b>	HIV-infection. Sepsis. Tuberculosis.	Discussion and detailing of the lecture topic with the help of a multimedia presentation	3H-28	According to approved schedule
<b>Chapter 1. General pathomorphology</b>				
<b>P-1</b>	Pathomorphology as science, part of practical medicine and educational object. Methods of research in pathomorphology. Autopsy.	Determining the primary level of student's knowledge by using of testing on the MISA platform. Discussion of issues of the topic. Examination of gross-view samples and microscopic slides, visit to the Museum of Human Diseases, performance of clinical and situational tasks, final testing	3H-1, YM-1, K-1,2,3 AB-1,2,3	According to approved schedule

<b>P-2</b>	Acute injury. Morphology of reversible and irreversible injury of cells and tissues. Necrosis and apoptosis. Death, definition, signs of death.	-«-	3 <sub>H-1</sub> , Y <sub>M-1</sub> , K-1,2,3 AB-1,2,3	According to approved schedule
<b>P-3</b>	Chronic injury. Intracellular and extracellular accumulations of proteins, lipids, carbohydrates. Amyloidosis.	-«-	3 <sub>H-1</sub> , Y <sub>M-1</sub> , K-1,2,3 AB-1,2,3	According to approved schedule
<b>P-4</b>	Pigment accumulations. Pathologic calcification.	-«-	3 <sub>H-1</sub> , Y <sub>M-1</sub> , K-1,2,3 AB-1,2,3	According to approved schedule
<b>P-5</b>	Edema. Hyperemia. Congestion. Hemorrhage. Disorders of lymph flow.	-«-	3 <sub>H-2</sub> , Y <sub>M-2</sub> , K-1,2,3 AB-1,2,3	According to approved schedule
<b>P-6</b>	Thrombosis. Embolism. Infarction. Disseminated intravascular coagulation. Shock.	-«-	3 <sub>H-2</sub> , Y <sub>M-2</sub> , K-1,2,3 AB-1,2,3	According to approved schedule
<b>P-7</b>	Colloquium: Gross view changes and microscopical features of alteration and hemodynamic disorders.	Determining the level of student's knowledge about etiology, pathogenesis, gross-view changes and microscopical features of According to approved schedule different types of cell injuries and disorders of blood and lymph flow, their complications and consequences, establishing the level of practical skills in relation to the diagnosis of the above listed general pathological processes.	3 <sub>H-1,2</sub> , Y <sub>M-1,2</sub> , K-1,2,3 AB-1,2,3	According to approved schedule
<b>P-8</b>	Defensive mechanisms and their morphologic equivalents. Acute inflammation.	Determining the primary level of student's knowledge by using of testing on the MISA platform. Discussion of issues of the topic. Examination of gross-view samples and microscopic slides, visit to the Museum of Human Diseases, performance of clinical and situational tasks, final testing	3 <sub>H-3</sub> , Y <sub>M-3</sub> , K-1,2,3 AB-1,2,3	According to approved schedule
<b>P-9</b>	Chronic inflammation.	-«-	3 <sub>H-3</sub> , Y <sub>M-3</sub> , K-1,2,3 AB-1,2,3	According to approved schedule
<b>P-10</b>	Disorders of immune system.	-«-	3 <sub>H-4</sub> , Y <sub>M-4</sub> , K-1,2,3 AB-1,2,3	According to approved schedule
<b>P-11</b>	Adaptive reactions.	-«-	3 <sub>H-5,6</sub> , Y <sub>M-5,6</sub> , K-1,2,3	According to approved schedule

	Repair. Wound healing. Regeneration. Sclerosis.		AB-1,2,3	
<b>P-12</b>	General principles and classifications of tumor growth. Epithelial tumors. Clinical course.	-«-	3H-7,8, YM-7, K-1,2,3 AB-1,2,3	According to approved schedule
<b>P-13</b>	Molecular basis of cancerogenesis. Diagnostic methods. Mesenchymal tumors. Neuroectodermal tumors.	-«-	3H-9,10, YM-8,9, K-1,2,3 AB-1,2,3	According to approved schedule
<b>P-14</b>	Tumors of blood cells.	-«-	3H-11, YM-10, K-1,2,3 AB-1,2,3	According to approved schedule
<b>P-15</b>	Colloquium: Gross view changes and microscopical features of different types of inflammation, immunopathological processes, adaptation, regeneration, tissue repair and tumors of different origin. Postmortem examination.	Determining the level of student's knowledge about etiology, pathogenesis, gross- view changes and microscopical features of different types of inflammation, immuno- pathological processes, adaptation, regeneration, tissue repair and tumors of different origin, their complications and consequences, establishing the level of practical skills in relation to the diagnosis of the above listed general pathological processes.	3H-3-11, YM-3-10, K-1,2,3 AB-1,2,3	According to approved schedule
<b>Chapter 2. Special pathomorphology</b>				
<b>P-16</b>	Introduction to special pathology. Autopsy. Blood cell diseases.	Determining the primary level of student's knowledge by using of testing on the MISA platform. Discussion of issues of the topic. Examination of gross-view samples and microscopic slides, visit to the Museum of Human Diseases, performance of clinical and situational tasks, final testing	3H-12-13, YM-11, K-1,2,3 AB-1,2,3	According to approved schedule
<b>P-17</b>	Arteriosclerosis. Atherosclerosis. Hypertensive disease. Secondary hypertension.	-«-	3H-14, YM-12, K-1,2,3 AB-1,2,3	According to approved schedule
<b>P-18</b>	Ischemic heart disease. Cerebrovascular diseases. Cardiomyopathies.	-«-	3H-14, YM-12, K-1,2,3 AB-1,2,3	According to approved schedule
<b>P-19</b>	Valvular heart diseases.	-«-	3H-14, YM-	According to

	Rheumatic diseases.		12, K-1,2,3 AB-1,2,3	approved schedule
<b>P-20</b>	Acute respiratory diseases.	-«-	3H-15, YM-13, K-1,2,3 AB-1,2,3	According to approved schedule
<b>P-21</b>	Chronic diseases of respiratory system.	-«-	3H-15, YM-13, K-1,2,3 AB-1,2,3	According to approved schedule
<b>P-22</b>	Diseases of upper and lower gastrointestinal tract.	-«-	3H-16, YM-14, K-1,2,3 AB-1,2,3	According to approved schedule
<b>P-23</b>	Diseases of liver, biliary system and pancreas	-«-	3H-17, YM-15, K-1,2,3 AB-1,2,3	According to approved schedule
<b>P-24</b>	Colloquium: Gross view changes and microscopical features of cardiovascular, respiratory and digestive systems	Determining the level of student's knowledge about etiology, pathogenesis, gross-view changes and microscopical features of different diseases of blood system, cardiovascular pathology, respiratory system, GIT, hepato-biliary system, their main complications and consequences, establishing the level of practical skills in relation to the diagnosis of the above listed diseases.	3H-12-17, YM-11-15, K-1,2,3 AB-1,2,3	According to approved schedule
<b>P-25</b>	Diseases of kidney – glomerulopathies. Renal failure.	Determining the primary level of student's knowledge by using of testing on the MISA platform. Discussion of issues of the topic. Examination of gross-view samples and microscopic slides, visit to the Museum of Human Diseases, performance of clinical and situational tasks, final testing	3H-18, YM-16, K-1,2,3 AB-1,2,3	According to approved schedule
<b>P-26</b>	Diseases of kidney – tubulopathies. Acute tubulonecrosis. Pyelonephritis. Urolithiasis.	-«-	3H-18, YM-16, K-1,2,3 AB-1,2,3	According to approved schedule
<b>P-27</b>	Diseases of genital tract. Gestational disorders.	-«-	3H-20, YM-18, K-1,2,3 AB-1,2,3	According to approved schedule
<b>P-28</b>	Diseases of infancy and childhood.	-«-	3H-21, YM-19, K-1,2,3 AB-1,2,3	According to approved schedule
<b>P-29</b>	Diseases of endocrine system.	-«-	3H-19, YM-17, K-1,2,3 AB-1,2,3	According to approved schedule
<b>P-30</b>	Diseases of central nervous and skeleton-muscular systems.	-«-	3H-22, 23, YM-20, 21, K-1,2,3 AB-1,2,3	According to approved schedule
<b>P-31</b>	Gastrointestinal infections.	-«-	3H-24, YM-22, K-1,2,3	According to approved schedule

<b>P-32</b>	Bacterial infections.	-«-	AB-1,2,3 3H-25, YM-23, K-1,2,3 AB-1,2,3	According to approved schedule
<b>P-33</b>	Viral infections.	-«-	3H-26, YM-24, K-1,2,3 AB-1,2,3	According to approved schedule
<b>P-34</b>	HIV infection. Sepsis. Tuberculosis.	-«-	3H-27, YM-25, K-1,2,3 AB-1,2,3	According to approved schedule
<b>P-35</b>	Colloquium: Gross view changes and microscopical features of endocrine, skeletal, nervous systems, infectious diseases. Postmortem examination.	Determining the level of student's knowledge about etiology, pathogenesis, gross-view changes and microscopical features of different renal diseases, pathology of female and male reproductive systems, endocrine, skeletal, nervous systems diseases, infectious diseases, their main complications and consequences, establishing the level of practical skills in relation to the diagnosis of the above listed diseases.	3H-18-27, YM-16-25, K-1,2,3 AB-1,2,3	According to approved schedule
<b>Chapter 1. General pathomorphology</b>				
<b>SRS-1 (self-reliant study 1)</b>	Mechanisms and morphologic changes in different types of injury. Hypoxia: mechanisms and morphologic changes. Free radical injury. Chemical injury.	Independent study of the topic with the use of modern innovative technologies, filling in tables, diagrams and tasks in the relevant part of the workbook, control of knowledge in a practical lesson / colloquium	3H-1, YM-1, K-1,2,3 AB-1,2,3	According to approved schedule
<b>SRS-2</b>	Ultrastructural pathology of cell. Cellular-matrix interactions. Adjustment of intracellular and extracellular mechanisms of metabolism.	-«-	3H-1, YM-1, K-1,2,3 AB-1,2,3	According to approved schedule
<b>SRS-3</b>	Death of the organism from biological, social and medical positions. Determination of fetal death. Thanatogenesis. Mechanisms and morphological manifestations of cessation of vital organs in the natural course of the disease.	-«-	3H-1, YM-1, K-1,2,3 AB-1,2,3	According to approved schedule
<b>SRS-4</b>	Selective death of specialized cells in a living organism	-«-	3H-1, YM-1, K-1,2,3 AB-1,2,3	According to approved schedule

<b>SRS-5</b>	Genetic diseases caused by enzyme defects: lysosomal diseases, accumulation diseases (thesaurysmosis). Lesions caused by disorders of folding and intracellular transport of proteins.	-«-	3 <sub>H</sub> -1, Y <sub>M</sub> -1, K-1,2,3 AB-1,2,3	According to approved schedule
<b>SRS-6</b>	Clinical and morphological features of different forms of amyloidosis.	-«-	3 <sub>H</sub> -1, Y <sub>M</sub> -1, K-1,2,3 AB-1,2,3	According to approved schedule
<b>SRS-7</b>	Mechanisms of accumulation of exogenous pigments. Jaundice: etiological factors, definitions, classifications, mechanisms. Metabolic disorders of iron (hereditary and acquired hemochromatosis) and copper (Konovalov-Wilson disease). Stone formation: localization, types of stones, consequences and complications of stone formation.	-«-	3 <sub>H</sub> -1, Y <sub>M</sub> -1, K-1,2,3 AB-1,2,3	According to approved schedule
<b>SRS-8</b>	Violation of ion-osmotic and water balance. Hyper- and hypokalemia: a role in thanatogenesis. Water imbalance, hypo- and hypernatremia: role in thanatogenesis of intercellular and cellular dehydration.	-«-	3 <sub>H</sub> -2, Y <sub>M</sub> -2, K-1,2,3 AB-1,2,3	According to approved schedule
<b>SRS-9</b>	The role of the vascular wall, blood coagulation system in physiological hemostasis and thrombosis. Hypercoagulable states.	-«-	3 <sub>H</sub> -2, Y <sub>M</sub> -2, K-1,2,3 AB-1,2,3	According to approved schedule
<b>SRS-10</b>	Pathogenesis and main stages of development of different types of shock, typical morphological changes in organs during shock. DIC syndrome: pathogenesis, stages, their morphological features, significance.	-«-	3 <sub>H</sub> -2, Y <sub>M</sub> -2, K-1,2,3 AB-1,2,3	According to approved schedule
<b>SRS-11</b>	Fundamentals of the immune response. Morphological manifestations of immune reactions in peripheral lymphoid organs, thymus. The concept of innate and	-«-	3 <sub>H</sub> -4, Y <sub>M</sub> -4, K-1,2,3 AB-1,2,3	According to approved schedule

	acquired immunity. Features of the immune response in children. Accidental and age-related involution of the thymus.			
<b>SRS-12</b>	The role of neutrophils in the development of acute inflammation. Stages of development and resolution of acute inflammation. Differences between acute and chronic inflammation. Features of fibrinous and purulent inflammation in different organs: morphological changes and consequences.	-«-	3 <sub>H</sub> -3, Y <sub>M</sub> -3, K-1,2,3 AB-1,2,3	According to approved schedule
<b>SRS-13</b>	Macrophages and their role in chronic inflammation. Mechanisms of granuloma formation. Features of granulomatous inflammation in leprosy, scleroma, syphilis, felinosis, sarcoidosis: morphological changes and consequences.	-«-	3 <sub>H</sub> -3,4, Y <sub>M</sub> -3,4, K-1,2,3 AB-1,2,3	According to approved schedule
<b>SRS-14</b>	Immunological tolerance and mechanisms of its formation. Pathogenesis of autoimmune diseases. Graft rejection reactions (superacute, acute and chronic); graft reaction against the host). Immunodeficiency states: primary and secondary. The mechanism of immunodeficiency in HIV infection.	-«-	3 <sub>H</sub> -4, Y <sub>M</sub> -4, K-1,2,3 AB-1,2,3	According to approved schedule
<b>SRS-15</b>	Molecular basis of cell and tissue proliferation. Stem cells and their role at different stages of embryonic and ontogenesis. Features of cell proliferation in different organs. Mechanisms of wound healing and repair of individual tissues. Pathomorphology of organ failure.	-«-	3 <sub>H</sub> -5,6, Y <sub>M</sub> -5,6, K-1,2,3 AB-1,2,3	According to approved schedule
<b>SRS-16</b>	Molecular basis and main stages of carcinogenesis. Tumor progression, tumor dissemination. Local and general effects of tumors on the body. Violation of homeostasis of the body during tumor growth. Secondary changes in the tumor. Cancerous cachexia, paraneoplastic syndromes. Modern methods of morphological diagnosis of tumors. Rules for collection and referral of biopsy material for	-«-	3 <sub>H</sub> -7, Y <sub>M</sub> -7, K-1,2,3 AB-1,2,3	According to approved schedule

	histological examination.			
<b>SRS-17</b>	Morphology of tumors of exo- and endocrine glands and epithelial coverings.	-«-	3 <sub>H</sub> -7,8, Y <sub>M</sub> -7, K-1,2,3 AB-1,2,3	According to approved schedule
<b>SRS-18</b>	Nomenclature and morphological features of tumors of mesenchymal origin	-«-	3 <sub>H</sub> -9, Y <sub>M</sub> -8, K-1,2,3 AB-1,2,3	According to approved schedule
<b>SRS-19</b>	Nomenclature and morphological features of tumors of nervous and melanin-forming tissues.	-«-	3 <sub>H</sub> -10, Y <sub>M</sub> -9, K-1,2,3 AB-1,2,3	According to approved schedule
<b>SRS-20</b>	Features of tumor growth in childhood. Tumors from cambial embryonic tissues. Childhood tumors that develop by the type of adult tumors.	-«-	3 <sub>H</sub> -7-10, Y <sub>M</sub> -6-9, K-1,2,3 AB-1,2,3	According to approved schedule
<b>SRS-21</b>	Basic principles of morphological diagnosis of blood cell tumors. Features of some forms of myeloid, lymphoid and histiocytic tumors.		3 <sub>H</sub> -11, Y <sub>M</sub> -10, K-1,2,3 AB-1,2,3	According to approved schedule
<b>Chapter 2. Special pathomorphology</b>				
<b>SRS-22</b>	The concept of "disease", manifestations and complications of diseases. Principles of disease classification. The concept of "diagnosis", the structure of the diagnosis. The concept of "pathomorphosis" of the disease. Types of pathomorphosis.	-«-	3 <sub>H</sub> -12-13, Y <sub>M</sub> -11, K-1,2,3 AB-1,2,3	According to approved schedule
<b>SRS-23</b>	Some forms of hereditary anemia (spherocytosis, sickle cell anemia, thalassemia) and hemorrhagic diathesis (hemophilia, von Willebrand disease)	-«-	3 <sub>H</sub> -12-13, Y <sub>M</sub> -11, K-1,2,3 AB-1,2,3	According to approved schedule
<b>SRS-24</b>	Diseases of the cardiovascular system. Aortic aneurysms (atherosclerotic, stratifying). Symptomatic hypertension. Subarachnoid hemorrhage and malformations of cerebral vessels. Reperfusion syndrome.	-«-	3 <sub>H</sub> -14, Y <sub>M</sub> -12, K-1,2,3 AB-1,2,3	According to approved schedule
<b>SRS-25</b>	Systemic vasculitides: nodular periarteritis, Takayasu's arteritis, temporal (giant cell) arteritis, obliterative thromboangiitis, Kawasaki disease, Shenlein-Genoch purpura, Raynaud's disease and syndrome. ANCA-associated vasculitides: microscopic polyangiitis, granulomatosis with	-«-	3 <sub>H</sub> -14, Y <sub>M</sub> -12, K-1,2,3 AB-1,2,3	According to approved schedule



	polyangiitis (Wegener), eosinophilic granulomatosis with polyangiitis (Cherja-Strauss syndrome). Endocardial lesions: infectious endocarditis, Lefler's eosinophilic endocarditis. Myocardial damage: idiopathic myocarditis Abramov-Fiedler.			
<b>SRS-26</b>	Chronic restrictive lung diseases (fibrosing, granulomatous; allergic and smoking-related). Respiratory distress syndrome of the adult type. Tumors of the upper respiratory tract, lung cancer.	-«-	3H-15, YM-13, K-1,2,3 AB-1,2,3	According to approved schedule
<b>SRS-27</b>	Diseases of the oropharynx, salivary glands, esophagus. Diverticula. Hirschsprung's disease. Malabsorption syndrome (celiac disease, sprue, Whipple's disease, lactase deficiency, abetalipoproteinemia). Tumors of the oropharynx, esophagus, stomach, small and large intestine.	-«-	3H-16, YM-14, K-1,2,3 AB-1,2,3	According to approved schedule
<b>SRS-28</b>	Gallstone disease, acute and chronic cholecystitis, tumors. Acute and chronic pancreatitis, tumors. Drug-induced hepatitis. Metabolic liver diseases (non-alcoholic fatty liver disease, hemochromatosis, Wilson's disease, A1-antitrypsin deficiency).	-«-	3H-17, YM-15, K-1,2,3 AB-1,2,3	According to approved schedule
<b>SRS-29</b>	Secondary glomerulopathies. Tubulointerstitial nephritis. Hydronephrosis. Cystic kidney disease: Malformations of the urinary system. Tumors of the kidneys and bladder	-«-	3H-18, YM-16, K-1,2,3 AB-1,2,3	According to approved schedule
<b>SRS-30</b>	Breast disease. Sexually transmitted infections (syphilis, gonorrhea, papillomavirus infection, chlamydia, ureaplasmosis, trichomoniasis. Pathology of pregnancy and postpartum period. Spontaneous and medical abortions. Ectopic pregnancy. NPG gestosis. Trophoblastic disease. Pathology of manure.	-«-	3H-20, YM-18, K-1,2,3 AB-1,2,3	According to approved schedule
<b>SRS-31</b>	Genetic diseases:	-«-	3H-21, YM-19, K-1,2,3	According to approved schedule

	Mendelian diseases, cytogenetic, lesions with multifactorial and non-classical inheritance. Congenital malformations: morphological characteristics. Sudden infant death syndrome.		AB-1,2,3	
<b>SRS-32</b>	Diseases of the endocrine system: Hypothalamo-pituitary disorders. Pathology of the adrenal glands. Pathology of the endocrine system of the pancreas. MEN syndrome.	-<<	3 <sub>H</sub> -19, Y <sub>M</sub> -17, K-1,2,3 AB-1,2,3	According to approved schedule
<b>SRS-33</b>	Slow viral neuroinfections and prion diseases (chicken, Creutzfeldt-Jakob disease). Tumors of the central nervous system (astroglial, oligodendroglial, ependymal, neuronal, meningeal), cranial and paraspinal nerves. Postreanimation encephalopathy and brain death syndrome.	-<<	3 <sub>H</sub> -22, Y <sub>M</sub> -20, K-1,2,3 AB-1,2,3	According to approved schedule
<b>SRS-34</b>	Diseases of muscles, bones, joints; congenital and toxic myopathies; lesions of the neuromuscular junction - myasthenia gravis (myasthenia gravis).	-<<	3 <sub>H</sub> -23, Y <sub>M</sub> -21, K-1,2,3 AB-1,2,3	According to approved schedule
<b>SRS-35</b>	Skin diseases: terminology that reflects skin pathology. Inflammatory and vesicular skin diseases. Pigmentation disorders: albinism, vitiligo, nevi. Other diseases: keratoacanthoma, dermatofibroma, epidermal cysts, hemangiomas, fibroepithelial polyp. Keloid. Malignant tumors of the skin: skin cancer, basal cell carcinoma, melanoma.	-<<	3 <sub>H</sub> -29, Y <sub>M</sub> -27, K-1,2,3 AB-1,2,3	According to approved schedule
<b>SRS-36</b>	Pathomorphological changes in nutrition-related diseases. Occupational diseases associated with the influence of chemical production factors, dust; changes in atmospheric pressure; industrial noise; electromagnetic waves; temperature; electric current; ionizing radiation. Iatrogenic drug pathology, morphological characteristics.	-<<	3 <sub>H</sub> -30, Y <sub>M</sub> -28, K-1,2,3 AB-1,2,3	According to approved schedule
<b>SRS-37</b>	Infectious and parasitic diseases. Characteristics of the infectious process. Morphological variants of local and general reactions depending on the etiology of infection (bacterial,	-<<	3 <sub>H</sub> -24-27, Y <sub>M</sub> -22-25, K-1,2,3 AB-1,2,3	According to approved schedule

	viral, parasitic, fungal, etc.): with the participation of neutrophils (purulent inflammation); with the participation of lymphocytes and macrophages (mononuclear infiltration and granulomatous inflammation); under the action of viruses (cytopathic); with a predominance of necrotic local reaction.			
<b>SRS-38</b>	Helminthiasis (trichinosis, echinococcosis, cysticercosis, opisthorchiasis, schistosomiasis)	-«-	ЗН-31, УМ-29, К-1,2,3 АВ-1,2,3	According to approved schedule
<b>SRS-39</b>	Anthropozoonotic infections: plague, tularemia, brucellosis, anthrax.	-«-	ЗН-31, УМ-29, К-1,2,3 АВ-1,2,3	According to approved schedule
<b>SRS-40</b>	Вірусні інфекції. Сказ, натуральна віспа.	-«-	ЗН-31, УМ-29, К-1,2,3 АВ-1,2,3	According to approved schedule
<b>SRS-41</b>	Mycobacterial infections	-«-	ЗН-31, УМ-29, К-1,2,3 АВ-1,2,3	According to approved schedule
<b>SRS-42</b>	Diseases caused by rickettsiae, protozoa (malaria, balantidiasis, amebiasis), fungi.	-«-	ЗН-31, УМ-29, К-1,2,3 АВ-1,2,3	According to approved schedule

## 8. Verification of the results of study

### Current control

It is carried out during practical classes and aims to test students' mastery of educational material.

During the **current control** of knowledge, the student is obliged :

- ✓ demonstrate self-filled schemes, tables, algorithms;
- ✓ draw in histological slides of the topic of the lesson and be able to explain the main histological structures and their changes;
- ✓ describe gross-view samples related to the topic;
- ✓ give written answers to the proposed tests (including A-format tests) and situational tasks.

**Criteria for evaluation of current educational activities** - during the assessment of mastering of each topic for the student's current educational activity is used 4-point (traditional) scale grading system. Grading procedure includes scores of all types of work provided by the curriculum. The student must receive a grade for each topic. Forms of assessment of current educational activities include control of theoretical and practical training. Scores on the traditional scale are converted into points.

#### **Evaluation of current educational activities in current practical lessons and colloquiums:**

- ✓ completed schemes, tables, algorithms are evaluated from 0 to 3 points: 0 - not completed, 1 point - completed 1/3, 2 points - completed 2/3, 3 points - all completed;
- ✓ sketching and marking of histological slides is estimated from 0 to 2 points: 0 points – not done, 1 point - only sketched or only marked, 2 points - everything is done;
- ✓ test control is evaluated from 0 to 5 points: 0 points - less than 60% of correct answers, 3 points - 60-79% of correct answers, 4 points - 80-89%, 5 points -> 90% of correct answers.

The total amount of points is from 5 to 10, which corresponds to the traditional score: 5-6 points - grade "satisfactory", 7-8 points - grade "good", 9-10 points - grade "excellent".

**«Excellent («5»)»** – The student correctly answered 90-100% of the tests of format A. Correctly, clearly, completely and logically answers the standardized questions of the current topic, including questions of the lecture course and independent work; correctly filled in all the tables and diagrams in the "Workbook". Closely connects theory with practice and correctly demonstrates the implementation of practical skills, correctly performed all tasks related to histological slides. Freely interprets the identified morphological changes in gross-view samples and histological slides, solves situational problems of increased complexity, is able to summarize the material.

**«Good («4»)»** – The student correctly answered 70-89% of the tests of format A. Correctly and essentially answers the questions of the current topic, including questions of the lecture course and independent work, with minor errors filled in all the tables and diagrams in the "Workbook". Demonstrates the performance of practical skills,

correctly or with minor errors performed all tasks related to histological slides. Correctly uses theoretical knowledge to interpret the identified morphological changes in gross-view samples and histological slides, solves easy and medium-sized situational problems. Have the necessary practical skills and techniques to perform them in excess of the required minimum.

**«Satisfactory» («3»)** – The student correctly answered 60-69% of the tests of format A. Incomplete, with the help of additional questions, answers the standardized questions of the current topic, including questions of the lecture course and independent work, filled in all the tables and diagrams in the "Workbook" with significant errors. Cannot create own clear, logical answer. During the answer and demonstration of practical skills makes significant mistakes, with significant mistakes performed tasks related to histological slides. The student solves only easy situational problems, has only a minimum of necessary practical skills.

**«Unsatisfactory («2»)** – The student correctly answered less than 60% of the tests of format A. Does not know the material of the current topic, did not fill in all the tables and diagrams in the "Workbook". Cannot independently build a logical answer to additional questions, does not understand the content of the material. When answering and demonstrating, performing practical skills makes significant, serious mistakes.

**Criteria for evaluation of self-reliant study:** Assessment of students' independent work, which is provided in the topic along with practical lesson work, is carried out during the current control of the topic in the relevant practical class. Assessment of topics that are submitted only for independent work and are not included in the topics of practical classes, is controlled by the final control (colloquiums).

<b>Code of the results of study</b>	<b>Code of the type of the lesson</b>	<b>Methods of verifying of learning outcomes</b>	<b>Criteria for credit</b>
3H-1-31, YM-1-29, K-1,2,3 AB-1,2,3	L-1-17, P-1-35, SRS-1-42	See the schemes described above in the chapter " <b>Current control</b> "	During the assessment of mastering each topic for the current educational activity of the student, grades are set on a 4-point (traditional) scale. This includes all types of work provided by the curriculum. The student must receive a positive grade on each topic. Forms of assessment of current educational activities include control of theoretical and practical training
<p><b>Final control</b></p> <p>In V semester, dedicated to «General Pathomorphology», the form of final control is a <b>credit</b>.            In VI semester, dedicated to «Special Pathomorphology», the form of final control is a <b>credit</b> from the relevant part of the discipline («Special Pathomorphology») and exam in a discipline «<b>Pathomorphology</b>»</p>			
<b>General system of assessment</b>	Participation in the work during the semester/exam – 60%/40% According to 200-score grading system		
<b>Scales of assessments</b>	Traditional 4-score scale, multi-score (200-score) scale, rating scale ECTS		
<b>Conditions for admission to final control</b>	Student attend all practical lessons and received not less than 120 points for current activity		
<b>Type of final control</b>	Methods of final control		Credit criterias
<b>Credit</b>	All topics submitted for current control must be passed. The average arithmetic mean of the grades given during the semester on a 4-point scale is converted into points on a multi-score (200-score) scale in accordance with the Regulation "Criteria, rules and procedures for evaluating the results of student learning activities"		<i>Maximum amount of points - 200.</i> <i>Minimum amount of points – 120</i>
<p><b>Criteria for assessing of the exam in the discipline</b>  <b>“Pathomorphology”</b></p>			

<b>Exam</b>	<p>Exam consists of two parts:</p> <p>1) determination of the level of mastery of practical skills in the discipline - knowledge and ability to diagnose pathomorphological changes in cells, tissues and organs, characteristic for general pathological processes and diseases (maximum - 20 points);</p> <p>2) determination of the level of theoretical training in the discipline (maximum - 60 points).</p> <p>Each of the parts is evaluated separately. The total maximum amount of points that a student can receive for the exam is 80.</p>	<p><b>Maximum</b> amount of points for exam – <b>80</b>.  <b>Minimum</b> amount of points for exam – <b>50</b>.  The average arithmetic mean of the scores for two semesters is added to the scores obtained for the exam; after that, accordingly, the final grade is calculated from the discipline.  <b>Minimum</b> amount of points, required to obtain «satisfactory» - <b>120</b>.  <b>Minimum</b> amount of points, required to obtain «good» - <b>140</b>.  <b>Minimum</b> amount of points, required to obtain «excellent» - <b>170</b>.  <b>Maximum</b> amount of points, which the student can get as the final score for studying discipline – <b>200</b>.</p>
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**Maximum amount of points** that student can score for the current academic activity for admission to the exam (differentiated credit) is 120 points.

**Minimum amount of points** that student must score for the current academic activity for admission to the exam (differentiated credit) is 72 points.

*The calculation of the number of points is based on the student's score on a 4-point (national) scale during the study of the discipline, by calculating the average arithmetic mean (CA), rounded to two decimal places. The value obtained is converted into points on a multi-score scale as follows:*

$$x = \frac{CA \times 120}{5}$$

**Conversion table on a 200-point scale:**

4-score scale	200-score scale	4-score scale	200-score scale	4-score scale	200-score scale	4-score scale
5	120	4.45	107	3.91	94	3.33
4.95	119	4.41	106	3.87	93	3.29
4.91	118	4.37	105	3.83	92	3.25
4.87	117	4.33	104	3.79	91	3.2
4.83	116	4.29	103	3.74	90	3.16
4.79	115	4.25	102	3.7	89	3.12
4.75	114	4.2	101	3.62	87	3.08
4.7	113	4.16	100	3.58	86	3.04
4.66	112	4.12	99	3.54	85	3
4.62	111	4.08	98	3.49	84	Less than 3
4.58	110	4.04	97	3.45	83	
4.54	109	3.99	96	3.41	82	
4.5	108	3.95	95	3.37	81	

## 9. Politics of course

Students during studying the discipline "Pathomorphology" must act in educational and professional situations from the standpoint of academic integrity and professional ethics, to perform educational tasks independently; correctly refer to sources of information in the case of borrowing ideas, statements, information; to realize the importance of the norms of academic integrity, to evaluate examples of human behavior in accordance with them; evaluate examples of human behavior in accordance with the norms of academic integrity; to give a moral assessment of one's own actions, to correlate them with moral and professional norms.

## 10. Literature

### Obligatory

1. Robbins&Cotran Pathologic Basis of Disease (Robbins Pathology) 10<sup>th</sup> Edition by V.Kumar, A.K.Abbas, J.C.Aster. – Canada: Elsevier Health Sciences, 2017 – 952 p.
2. Robbins Basic Pathology (Robbins Pathology) 10<sup>th</sup> Edition by V.Kumar, A.K.Abbas, J.C.Aster. – Canada: Elsevier Health Sciences, 2017 – 670 p.
3. Robbins and Cotran Atlas of Pathology 3<sup>rd</sup> Edition by E. Klatt. – Saunders, 2014. – 600 p.

### Additional

1. Diagnostic Pathology: Cytopathology 2<sup>nd</sup> Edition by D.M.Michael, J.Thrall, S.Krishnamuthy. – Elsevier Health Sciences, 2018 – 850 p.
2. S.E.Mills. Histology for Pathologists. – Lippincott Williams and Wilkins, 2012. – 1328 p.
3. Sternberg's Diagnostic Surgical pathology [2-Volume Set] 6<sup>th</sup> Edition by S.E.Mills, J.K.Greenon, J.L.Hornick, T.A.Longacre, V.E.Reuter. – Lippincott Williams and Wilkins, 2015.
4. Pathology: Implications for the Physical Therapist 4<sup>th</sup> Edition by C.C.Goodman, K.S.Fuller. – Elsevier Health Sciences, 2015 – 1800 p.
5. Fundamentals of Veterinary Clinical Pathology 2<sup>nd</sup> Edition by S.L.Stockman, M.A.Scott. – Wiley-Blackwell, 2008. – 908 p.
6. Comprehensive Radiographic Pathology 6<sup>th</sup> Edition by R.L.Eisenberg, N.M.Johnson. – Elsevier Health Sciences, 2016 – 480 p.
7. BRS Pathology 6<sup>th</sup> Edition by M.E.Peyton Gupta. – Wolters Kluwer Health, 2020. – 496 p.
8. Molecular Pathology 2<sup>nd</sup> Edition: The Molecular Basis of Human Diseases by W.Coleman, G.Tsongalis. – Academic Press, 2017. – 802 p.

## 11. Equipment, logistics and software providing of discipline

Microscopes, collections of gross-view samples and histological slides (academic collection and collection of the Museum of Human Diseases); tables; photos; multimedia presentations; methodical recommendations for teachers; methodical recommendations for practical lessons for students; methodical materials for self-reliant students' work; software providing of training platform MISA.

## 12. Additional information

Lectures and practical classes take place on the basis of the department, at the adress:

790010, Lviv, Pekarska str. 52

Responsible teacher for educational process at the Department:

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Head of students' scientific group:

Prof. L.I.Volos, [liliya.volos@gmail.com](mailto:liliya.volos@gmail.com)

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