



**CD 8.5.1 DISCIPLINE SYLLABUS  
FOR UNIVERSITY STUDIES**

**Edition: 10**

**Date: 10.04.2024**

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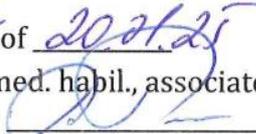
**FACULTY MEDICINE NO.2**

**STUDY PROGRAM 0912.1 MEDICINE**

**DEPARTMENT/CHAIR PATHOLOGY**

**APPROVED**

at the meeting of the Commission for Quality Assurance and Evaluation of the Curriculum in Medicine

Minutes No. 4 of 20.04.25  
Chairman, dr. med. habil., associate professor  
Pădure Andrei 

**APPROVED**

at the Council meeting of the Faculty Medicine No.2

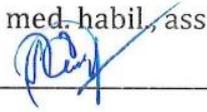
Minutes No. 4 of 21.04.25  
Dean of Faculty, DMSc, associate professor  
Bețiu Mircea 

**APPROVED**

approved at the meeting of the chair Pathology

Minutes No.6 of 01.03.2024

Head of chair, dr. med. habil., associate professor

Melnic Eugen 

**SYLLABUS**

**DISCIPLINE PATHOMORPHOLOGY**

**Integrated studies**

Type of course: **Compulsory discipline**

Curriculum developed by the team of authors:

Melnic Eugen, PhD, associate professor  
Vataman Vladimir, dr. of med, associate professor  
Parnov Mihail, university assistant

Chisinau, 2024



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### I. INTRODUCTION

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

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

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

- Mission of the curriculum (aim) in professional training

The mission of this study program is to substantiate the knowledge of general and special anatomical pathology necessary to understand the pathological processes in accordance with the etiology and mechanisms of disease production, mastering the macroscopic and microscopic aspects of different categories of lesions. Knowledge and understanding the way of producing, evolution and the consequences of lesions. Defining and identifying lesions according to macroscopic and histopathological aspects. Understanding the need to recognize injuries in the general context of the disease. Learning the technique of macroscopic and histopathological examination of organs and tissues. The knowledge obtained from the study of pathology will be integrated with other courses to provide means of evaluation and diagnosis of patients. Understanding the need to recognize injuries in the general context of the disease. Knowledge obtained from a study of pathomorphology will be included with other disciplines to provide methods of assessment and diagnosis of patients.

- Language (s) of the discipline: Romanian, russian, english, french.
- Beneficiaries: students of the IIIrd year, faculty medicine.

### II. MANAGEMENT OF THE DISCIPLINE

Code of discipline	F.05.O.044/F.06.O.052
Name of the discipline	<b>Pathomorphology</b>

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Person(s) in charge of the discipline		<b>Melnic Eugen</b>	
Year	<b>III</b>	Semester/Semesters	<b>V/VI</b>
Total number of hours, including:			<b>240</b>
Lectures	<b>30/30</b>	Practical/laboratory hours	<b>25/25</b>
Seminars	<b>20/20</b>	Self-training	<b>45/45</b>
Form of assessment	<b>E/E</b>	Number of credits	<b>4/4</b>

### III. TRAINING AIMS WITHIN THE DISCIPLINE

**At the end of the discipline study the student will be able to:**

- **at the level of knowledge and understanding:**
  - ✓ Acquiring a specific language of pathological anatomy, needed in dialogue with representatives of various medical specialties;
  - ✓ Correlation of these notions with those presented in other clinical or preclinical disciplines;
  - ✓ Correlation of clinical manifestations of diseases with macroscopic and microscopic changes.
  - ✓ Formulation of a suitable differential diagnosis of lesions present in a given patient;
  - ✓ Establishing the role of the anatomopathological examination in establishing the diagnosis.
  - ✓ Establishing a correct diagnosis with clinical and anatomopathological data;
  - ✓ Knowledge of the main lesions from anatomopathological point of view and understanding of the main histological changes as well as the mechanisms of their production.
- **at the application level:**
  - ✓ To properly use disease-specific terminology;
  - ✓ To be able to describe and comment from the anatomo-pathological point of view the diseases studied in the clinic;
  - ✓ To be able to interpret a histopathological report;
  - ✓ To sensitize future clinicians of the decisive importance of histopathological diagnosis for medical practice.
- **at the integration level:**
  - ✓ To be able to evaluate the place and role of pathomorphology in the preclinical training of the medical student;
  - ✓ To be competent to use the knowledge and methodology of pathological anatomy in the ability to explain the nature of pathological processes;
  - ✓ To be able to make a connection between structure and function at molecular → cellular → tissue → organ level;
  - ✓ To be able to deduce the possible causes of the suffering of the pathological processes and their consequences on the cell, the tissue, the body as a whole;
  - ✓ To be able to implement the knowledge gained in the work of a researcher;



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- ✓ To be competent to use critical and reliable scientific information obtained using the new information and communication technologies;
- ✓ To be able to use multimedia technology to receive, evaluate, store, produce, present and exchange information, and communicate and participate in networks via the internet;
- ✓ To be able to learn, which will contribute to the management of the professional route.

### IV. PROVISIONAL TERMS AND CONDITIONS

- Knowledge of the language of teaching;
- Competences confirmed in the disciplines of previous years of studies;
- Digital competences (use of the internet, document processing, electronic tables and presentations, use of graphics programs);
- Ability to communicate and team work;
- Qualities - tolerance, compassion, autonomy.

### V. THEMES AND ESTIMATE ALLOCATION OF HOURS

*Lectures, practical hours/ laboratory hours/seminars and self-training*

No. d/o	THEME	Number of hours		
		Lectures	Practical hours	Self-training
1.	Introduction to pathomorphology, notions of disease, diagnosis, etiology, pathogenesis, medical errors, cytopathology, ICD.	2	3	3
2.	Cell pathology. Reversible intra- and extracellular lesions (accumulations).	1	3	3
3.	Endogenous and exogenous pigments. Pathological calcinosis.	1	3	3
4.	Irreversible tissue / cellular lesions.	2	3	3
5.	Adaptation and compensation processes. Tissue regeneration.	2	3	3
6.	Circulatory disorders (I).	2	3	3
7.	Circulatory disorders (II).	2	3	3
8.	<b>Test No.1: themes 1-7.</b> Inflammation. Acute inflammation.	1	3	3
9.	Chronic inflammation.	1	3	3
10.	Immunopathological processes.	4	3	3
11.	Tumors: general aspects. Nomenclature. General characteristics of benign and malignant neoplasms.	2	3	3
12.	Infectious diseases. Tuberculosis.	2	3	3
13.	Pre- and perinatal pathology. Perinatal infections.	2	3	3



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No. d/o	THEME	Number of hours		
		Lectur es	Practical hours	Self-training
14.	Pathology of the hematopoietic system. <b>Test No.2: themes 8-14.</b>	1	3	3
15.	Lymphoid tumor proliferations: lymphomas.	1	3	3
16.	Vascular pathology.	2	3	3
17.	Heart pathology.	2	3	3
18.	Pulmonary pathology.	4	3	3
19.	Pathology of the upper digestive system.	2	3	3
20.	Intestinal pathology.	2	3	3
21.	Pathology of the liver, bile ducts, gallbladder and exocrine pancreas. <b>Test No.3: themes 16-21.</b>	2	3	3
22.	Kidney diseases.	2	3	3
23.	Pathology of the male genital system. Sexually transmitted infections. Urinary bladder pathology.	2	3	3
24.	Pathology of the female genital organs.	2	3	3
25.	Pathology of the mammary gland. Pathology of pregnancy, post-partum period and placenta.	4	3	3
26.	Pathology of the endocrine glands.	2	3	3
27.	Skin and soft tissue pathology. Pathology of the osteoarticular system	2	3	3
28.	Central and peripheral nervous system pathology.	2	3	3
29.	Tumors of the central nervous system. Primary and secondary tumors. <b>Test No.4: themes 22-29.</b>	2	3	3
30.	Sepsis.	2	3	3
<b>Total</b>		<b>60</b>	<b>90</b>	<b>90</b>

## **VI. PRACTICAL TOOLS PURCHASED AT THE END OF THE COURSE**

Mandatory essential practical tools are:

- Learning the method of describing macroscopic and microscopic lesions;
- Learning the method of formulating an anatomopathological diagnosis.
- Appropriate and correct use of specific medical terminology in the field of pathological anatomy and cytopathology.
- Application of differential diagnosis between different types of lesions depending on the study method.
- Learning the technique of collecting samples for histopathological examination.



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- Awareness of the role of establishing the anatomopathological diagnosis following the intravital, post-mortem examination as well as for research activities.
- Understanding the need to correlate the anatomopathological diagnosis with other methods of investigation (ultrasound, radiological, microbiological examination, etc.), as the diagnosis is ultimately the result of teamwork.
- Development of skills regarding the preparation and presentation of a specialized report.
- Awareness of the need for permanent documentation and continuous practice of mastered techniques.

## VII. OBJECTIVES AND CONTENT UNITS

Objective	Content units
<b>Theme (chapter) 1.</b> Introduction to pathomorphology, notions of disease, diagnosis, etiology, pathogenesis, medical errors, cytopathology, ICD	
<ul style="list-style-type: none"><li>• To know the notions of disease, etiology, pathogenesis, morphogenesis;</li><li>• To know the role of morphological lesions in the development and evolution of diseases;</li><li>• To know the concept of iatrogenesis and medical error;</li><li>• To know the risk factors in the development of iatrogenesis in the conditions of contemporary medicine.</li></ul>	<ol style="list-style-type: none"><li>1. Etiology and pathogenesis. Nosological aspects;</li><li>2. Pathomorphosis of diseases. Pathology of therapy (iatrogenic), critical care and resuscitation;</li><li>3. Classification and nomenclature of diseases. Diagnosis, the principles on which it is based. Main disease, concomitant diseases, complications, causes of death.</li></ol>
<b>Theme (chapter) 2.</b> Cell pathology. Reversible intra- and extracellular lesions (accumulations)	
<ul style="list-style-type: none"><li>• To know the concept and definition of morphological changes in degenerations;</li><li>• To know the causes and structural changes of reversible tissue and cellular lesions;</li><li>• To know the etiology of metabolic disorders, their classification.</li></ul>	<ol style="list-style-type: none"><li>1. Ultrastructural manifestations of cell lesions;</li><li>2. Causes of reversible cell lesions;</li><li>3. Concept and morphological manifestations of cellular / tissue degeneration, hydropic lipid, hyaline, fibrinoid degeneration.</li></ol>
<b>Theme (chapter) 3.</b> Endogenous and exogenous pigmentations. Pathological calcinosis	
<ul style="list-style-type: none"><li>• To know the classification of endogenous pigments;</li></ul>	<ol style="list-style-type: none"><li>1. Causes of mixed cell lesions;</li><li>2. Physiological and pathological hemoglobinogenic pigments;</li></ol>



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<b>Objective</b>	<b>Content units</b>
<ul style="list-style-type: none"><li>To know the causes and changes that occur in tissues following the accumulation of endogenous pigments;</li><li>To know the concept of pathological calcinosis;</li><li>To know the classification of pathological calcinosis.</li></ul>	3. Lipidogenic and proteinogenic pigments: classification, causes of excess accumulation.
<b>Theme (chapter) 4. Irreversible tissue / cellular lesions</b>	
<ul style="list-style-type: none"><li>To know the concept and definition of morphological changes in necrosis;</li><li>To know the causes and structural changes of irreversible cellular lesions.</li></ul>	<ol style="list-style-type: none"><li>Causes of reversible cell lesions;</li><li>Concept and types of necrosis, pathological changes and consequences of necrosis;</li><li>Somatic death, signs of death, postmortem changes.</li></ol>
<b>Theme (chapter) 5. Adaptation and compensation processes. Tissue regeneration.</b>	
<ul style="list-style-type: none"><li>To know the concept and morphological manifestations of atrophy, hypertrophy, hyperplasia and metaplasia;</li><li>To know the causes and variants of atrophy;</li><li>To understand the concept of regeneration and repair, morphology and function of granulation tissue;</li><li>To know the types of tissue regeneration, the wound healing process;</li><li>To know the factors that affect the wounds healing</li></ul>	<ol style="list-style-type: none"><li>The concept of adaptation, hypertrophy, hyperplasia, atrophy, metaplasia;</li><li>The concept of regeneration and repair, capacity and process of tissue regeneration;</li><li>The concept, morphology and function of the granulation tissue and the organization process;</li><li>The process of wounds healing, the specific healing of skin and bone fractures.</li></ol>
<b>Theme (chapter) 6. Circulatory disorders I</b>	
<ul style="list-style-type: none"><li>To know the concept of congestion, the characteristics of hepatic and pulmonary congestion, the variants and morphology of infarction;</li><li>To know the concept and types of arterial hyperemia;</li><li>To know the concept and types of ischemia.</li></ul>	<ol style="list-style-type: none"><li>The concept and types of hyperemia, the causes, morphology and consequences of congestion, pathological manifestations of chronic pulmonary and hepatic congestion;</li><li>The concept and causes of ischemia;</li><li>The concept, causes and morphology of infarction;</li></ol>
<b>Theme (chapter) 7. Circulatory disorders II</b>	
<ul style="list-style-type: none"><li>To know the concept of thrombosis and embolism, the causes and consequences of thrombosis;</li></ul>	<ol style="list-style-type: none"><li>The concept, causes, mechanism of thrombosis, morphological</li></ol>



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<ul style="list-style-type: none"><li>To know the concept and the types of embolism and the effects on the organism;</li><li>To know the concept, causes and consequences of hemorrhage.</li></ul>	<ol style="list-style-type: none"><li>evolution and effects of thrombosis;</li><li>The concept of embolism, types of embolism and effects on the body.</li><li>The concept, causes and types of hemorrhage.</li></ol>
<b>Theme (chapter) 8. Inflammation. Acute inflammation</b>	
<ul style="list-style-type: none"><li>To know the concept, the basic pathological changes and the classification of inflammation, mediators of inflammation;</li><li>To know the local causes and manifestations of inflammation;</li><li>To know the systemic effects of inflammation;</li><li>To know the changes in the acute inflammatory focus.</li></ul>	<ol style="list-style-type: none"><li>Definition and causes of inflammation, morphological lesions (alteration, exudation and proliferation), pathogenesis of mediating inflammation. Local signs and systemic effects of inflammation;</li><li>Morphological classification of inflammation: alterative, exudative and proliferative inflammation;</li><li>Variants of acute inflammation: serous, fibrinous, suppurative and hemorrhagic;</li><li>Consequences and clinical significance of inflammation;</li><li>Variants of evolution of acute inflammation.</li></ol>
<b>Theme (chapter) 9. Chronic inflammation</b>	
<ul style="list-style-type: none"><li>To know the cellular changes in chronic inflammation;</li><li>To know the classification of chronic inflammation;</li><li>To know the difference between specific and nonspecific chronic inflammation.</li></ul>	<ol style="list-style-type: none"><li>Chronic inflammation: concept, basic pathological changes, classification. Morphological characteristic of granulomatous inflammation;</li><li>Morphological characteristics of granulomas in tuberculosis, syphilis, leprosy, cat scratch disease, toxoplasmosis, foreign bodies, sarcoidosis.</li></ol>
<b>Theme (chapter) 10. Immunopathological processes</b>	
<ul style="list-style-type: none"><li>To know the general terms, structure and effector cells of the immune system;</li><li>To describe the peculiarities of the immune reactions in connective tissue diseases: rheumatoid arthritis, systemic lupus erythematosus, systemic sclerosis, dermatomyositis / polymyositis, Sjögren's syndrome, polyarteritis nodosa;</li><li>To know the classification of histocompatibility antigens and how they relate to the major histocompatibility complex and to transplantation.</li></ul>	<ol style="list-style-type: none"><li>Immune system, central and peripheral organs, structure, morphofunctional features;</li><li>The importance of the thymus in the evolution of immune processes in children and adults;</li><li>Hypersensitivity reactions, types and mechanisms of evolution;</li><li>Diseases of the immune complex (with special reference to glomerulonephritis);</li><li>Autoimmune diseases;</li></ol>



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Objective	Content units
	6. Immunodeficiency syndromes. HLA and transplantation.
<b>Theme (chapter) 11. Tumors</b>	
<ul style="list-style-type: none"> <li>To define neoplasia and the properties of malignant cells;</li> <li>To know the classification of tumors according to their clinical and histopathological characteristics;</li> <li>To describe benign and malignant tumors, local and systemic effects, the action of tumors on the host;</li> <li>To define metastases and their mechanisms;</li> <li>To know the nomenclature and the forms of carcinoma and sarcoma;</li> <li>To be familiar with the degrees and stages of malignant tumors;</li> <li>To know the nomenclature of tumors and pseudotumor processes;</li> <li>To understand the role of oncogenes in cancer, environmental carcinogens.</li> </ul>	<ol style="list-style-type: none"> <li>The concept of neoplasm, tumor nomenclature, tumor characteristics (tumor architecture, atypia, histological grade);</li> <li>Biological changes of cancer cells, tumor growth (growth rate, mode and spread), effects of the tumor on the host, etiology and pathogenesis of cancer;</li> <li>Tumor diagnostic methods, comparison of benign and malignant tumors, comparison of carcinoma and sarcoma;</li> <li>Precancerous lesions. Intraepithelial tumors. Common benign and malignant tumors (carcinoma and sarcoma).</li> </ol>
<b>Theme (chapter) 12. Infectious diseases. Tuberculosis.</b>	
<ul style="list-style-type: none"> <li>To determine the role of the host cell in bacterial infections;</li> <li>To know how bacteria can destroy cells and / or cause tissue damage;</li> <li>To know the bacterial infections that develop during childhood;</li> <li>To explain the emergence of new strains of drug-resistant microbial agents;</li> <li>To identify the structural elements of tuberculoma;</li> <li>To identify the forms of tuberculosis based on the morphological picture and its correlation with the clinical manifestations;</li> <li>To identify the consequences of tuberculosis.</li> </ul>	<ol style="list-style-type: none"> <li>Acute viral respiratory infections: influenza, parainfluenza, measles, rubella. Epidemiology, etiology, pathogenesis, anatomical pathology, complications, causes of death;</li> <li>Bacterial infections: meningococcal infection, diphtheria, scarlet fever. Etiology, epidemiology, pathogenesis, anatomical pathology, complications, causes of death;</li> <li>Tuberculosis: etiology, pathogenesis, classification. Primary, secondary and progressive tuberculosis: anatomical pathology, complications, causes of death. Pathomorphosis of tuberculosis.</li> </ol>
<b>Theme (chapter) 13. Pre- and perinatal pathology. Perinatal infections</b>	
<ul style="list-style-type: none"> <li>To differentiate the features of malformation, deformation, sequence and syndrome;</li> <li>To know the clinical features and major causes of the oligohydramnios sequence;</li> </ul>	<ol style="list-style-type: none"> <li>Pathology of the progenesis and cytotogenesis. Causes of gametopathies, blastopathies and embryopathies.</li> </ol>



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<ul style="list-style-type: none"><li>• To define agenesis, hypoplasia and dysplasia;</li><li>• To know the classification of congenital malformations and their clinical significance;</li><li>• To know the pale and cyanotic congenital heart defects, the structure and the clinical significance;</li><li>• To know the causes, clinical significance and consequences of hydrocephalus;</li><li>• To know the morphology of anencephaly, cerebral hernia and spina bifida;</li><li>• To know the TORCH complex of perinatal infections.</li></ul>	<p>Congenital malformations of the heart, central nervous system, urinary tract, digestive tract;</p> <p>2. Fetal pre- and supermaturity. Birth asphyxia, causes and consequences. Pneumopathy. Perinatal disorders of cerebral circulation. Intranatal cerebral hemorrhage;</p> <p>3. Hemolytic disease of the newborn. Cytomegaly, herpes, rubella and toxoplasmosis - specific histomorphological signs.</p>
<b>Theme (chapter) 14. Pathology of the hematopoietic system</b>	
<ul style="list-style-type: none"><li>• To define the notion of anemia and leukemia, their classification;</li><li>• To describe different types of leukemia and understand the underlying pathological changes related to clinical symptoms.</li></ul>	<p>1. Anemia: causes, pathogenesis, types, classification. Anemia due to hemorrhage (post-hemorrhage) and hemolysis (hemolytic), morphological features;</p> <p>2. Tumors of the blood system, hemoblastosis, classification;</p> <p>3. Leukemia as a systemic tumor of hematopoietic tissues, causes, pathogenesis, morphological characteristics;</p> <p>4. Acute leukemia, classification;</p> <p>5. Chronic myelocytic and lymphocytic leukemia;</p> <p>6. Plasmacytoma: classification, causes, development mechanisms, morphology, consequences.</p>
<b>Theme (chapter) 15. Lymphoid tumor proliferations: lymphomas</b>	
<ul style="list-style-type: none"><li>• To define the notion of lymphomas, their classification;</li><li>• To describe different types of Hodgkin and non-Hodgkin lymphoma and understand the basic pathological changes related to clinical symptoms.</li></ul>	<p>1. Hodgkin lymphoma: classification, causes, development mechanisms, morphology, consequences;</p> <p>2. Non-Hodgkin lymphoma: classification, causes, development mechanisms, morphology, consequences.</p>



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<b>Theme (chapter) 16. Vascular pathology</b>	
<ul style="list-style-type: none"><li>• To describe pathological lesions in atherosclerosis and major complications;</li><li>• To know the morphological manifestations and complications of atherosclerosis of the arteries of different organs;</li><li>• To describe the pathogenesis and pathological changes in hypertension;</li><li>• To describe the morphofunctional effects of arterial hypertension on vital organs;</li><li>• To know the concepts of thrombophlebitis, phlebothrombosis, varicose veins.</li></ul>	<ol style="list-style-type: none"><li>1. Atherosclerosis: causes, development mechanisms, morphology, consequences;</li><li>2. Hypertension: development mechanisms, morphology, consequences;</li><li>3. Aortic dissection: classification, causes, development mechanisms, morphology, consequences;</li><li>4. Vasculitis: classification, causes, development mechanisms, morphology, consequences.</li></ol>
<b>Theme (chapter) 17. Heart pathology</b>	
<ul style="list-style-type: none"><li>• To describe the pathogenesis, pathophysiology and symptoms of coronary heart disease;</li><li>• To know the morphological characteristics and complications of myocardial infarction and the correlation of these findings with clinical and paraclinical symptoms;</li><li>• To know the pathogenesis of rheumocarditis and to describe the typical cardiac lesions in rheumatic fever;</li><li>• To identify the variants of cardiac valvulopathies: aortic stenosis, regurgitation and mitral (rheumatic) stenosis.</li></ul>	<ol style="list-style-type: none"><li>1. Endocarditis: causes, developmental mechanisms, morphology, consequences;</li><li>2. Cardiosclerosis: causes, developmental mechanisms, morphological variants. Atherosclerosis and hypertension: etiology and pathogenesis, anatomical pathology, stages, clinical and morphological forms and their characteristics, causes of death;</li><li>3. The interrelationships between atherosclerosis and myocardial infarction;</li><li>4. Ischemic heart disease (coronary heart disease). Myocardial infarction. Morphology of acute, repeated and recurrent myocardial infarction, complications, causes of death;</li><li>5. Chronic ischemic heart disease: morphological features, complications, causes of death;</li><li>6. Primary and secondary cardiomyopathy: causes, pathogenesis, morphological manifestations.</li></ol>
<b>Theme (chapter) 18. Pulmonary pathology</b>	



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<ul style="list-style-type: none"><li>• To know the clinical situations associated with the impairment of the respiratory defense mechanisms;</li><li>• To know the 4 classic stages of lobar pneumonia;</li><li>• To know the character, causes and typical involvement of bronchopneumonia;</li><li>• To identify the correlation between COPD and air pollution and smoking;</li><li>• To identify morphological changes associated with chronic bronchitis and emphysema;</li><li>• To compare and correlate pathological changes in emphysema and bronchiectasis;</li><li>• To know the histological types of lung cancer;</li><li>• To know the pathogenesis and prognosis of lung cancer.</li></ul>	<ol style="list-style-type: none"><li>1. Acute pulmonary pathology: acute bronchitis, causes and mechanisms of development, classification, morphological characteristics;</li><li>2. Pneumonia: lobar pneumonia and bronchopneumonia: etiology, pathogenesis, pathological anatomy, atypical forms, complications;</li><li>3. Acute destructive processes in the lungs. Abscess, pulmonary gangrene: pathogenesis, morphology;</li><li>4. Chronic lung pathology, classification. Chronic bronchitis, bronchiectasis, pulmonary emphysema, asthma, chronic abscess. Interstitial lung disease: etiology, pathogenesis, pathological anatomy of nosological forms. Chronic pulmonary heart;</li><li>5. Lung cancer: frequency, etiology, pathogenesis, precancerous conditions, clinical and morphological features. Morphology of central and peripheral lung cancer.</li><li>6. Pleurisy: causes, developmental mechanisms, morphology, consequences.</li></ol>
<b>Theme (chapter) 19. Pathology of the upper digestive system</b>	
<ul style="list-style-type: none"><li>• To define the general categories of esophageal disorders;</li><li>• To know the variants of esophagitis according to the morphological picture;</li><li>• To define the morphology of gastritis;</li><li>• To know 2 morphological types of gastric carcinoma;</li><li>• To define the morphology of acute and chronic gastric ulcer, etiology and complications.</li></ul>	<ol style="list-style-type: none"><li>1. Esophageal pathology. Barrett's esophagus: clinical significance, morphofunctional changes and consequences;</li><li>2. Acute and chronic gastritis: causes, mechanism of development, morphological forms and their characteristics, complications;</li><li>3. Peptic ulcer disease of the stomach and duodenum: frequency, etiology,</li></ol>



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Objective	Content units
	complications, consequences. Gastric cancer: precancerous conditions, clinical and morphological characteristics, histological types, peculiarities of metastasis;
<b>Theme (chapter) 20. Intestinal pathology</b>	
<ul style="list-style-type: none"><li>• To know the ischemic disease of the intestine, macroscopic and microscopic aspects, complications;</li><li>• To be able to differentiate Crohn's disease and nonspecific ulcerative colitis from morphological point of view and correlations with clinical manifestations;</li><li>• To know the morphology of adenomatous polyps;</li><li>• To know the macroscopic, microscopic features and clinical features of colonic adenocarcinoma.</li></ul>	<ol style="list-style-type: none"><li>1. Nonspecific ulcerative colitis: causes, developmental mechanisms, anatomical pathology, complications;</li><li>2. Crohn's disease: causes, developmental mechanisms, anatomical pathology, complications;</li><li>3. Intestinal tumors: frequency, etiology, pathogenesis, morphological forms, their characteristic, metastasis, complications;</li></ol>
<b>Theme (chapter) 21. Pathology of the liver, bile ducts, gallbladder and exocrine pancreas</b>	
<ul style="list-style-type: none"><li>• To describe morphologically the forms of alcoholic hepatitis, steatosis, hepatitis and cirrhosis;</li><li>• To differentiate between nonalcoholic lipid degeneration and non-alcoholic steatohepatitis with alcoholic liver disease and hepatitis C virus infection;</li><li>• To know the microscopic characteristics of cirrhosis and their clinical significance;</li><li>• To differentiate between the two morphological variants of micronodular and macronodular cirrhosis and to understand why such classification can be clinically misleading;</li><li>• To differentiate the pathology of acute, fulminant and chronic hepatitis;</li><li>• To know the morphological peculiarities of liver carcinomas and metastatic liver carcinomas.</li></ul>	<ol style="list-style-type: none"><li>1. Hereditary and acquired hepatosis, acute and chronic: etiology, pathogenesis, anatomical pathology, complications;</li><li>2. Acute fulminant necrosis of the liver and liver cirrhosis, correlations and consequences;</li><li>3. The role of alcohol in the development of hepatic steatosis. Anatomical pathology, complications, consequences;</li><li>4. Acute and chronic hepatitis, primary and secondary. Viral hepatitis: classification, etiology and pathogenesis, clinical and morphological forms, complications, consequences. Viral hepatitis and liver cirrhosis. Acute and chronic alcoholic hepatitis, developmental mechanisms,</li></ol>



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Objective	Content units
	<p>morphological characteristics, complications, consequences;</p> <ol style="list-style-type: none"><li>5. Liver cirrhosis: etiology, pathogenesis and morphogenesis, classification, morphological feature, complications. Hepatorenal syndrome. Portal hypertension syndrome. Causes of death;</li><li>6. Liver cancer: causes, mechanisms of development, complications, causes of death;</li><li>7. Cholelithiasis, acute and chronic cholangitis;</li><li>8. Acute and chronic cholecystitis;</li><li>9. Carcinoma of the gallbladder and extrahepatic bile ducts;</li><li>10. Acute and chronic pancreatitis: causes, developmental mechanisms, pathological anatomy, complications;</li><li>11. Pancreatic cancer: causes, mechanism of development, complications, causes of death.</li></ol>
<b>Theme (chapter) 22. Kidney diseases</b>	
<ul style="list-style-type: none"><li>• To know the main causes and mechanisms that cause acute renal failure;</li><li>• To describe the uremic syndrome and the possible mechanisms that cause its clinical manifestations;</li><li>• To understand the pathogenesis of glomerulonephritis;</li><li>• To define the nephrotic syndrome and to know the clinical and morphological features of the diseases that cause the nephrotic syndrome;</li><li>• To know the clinical and morphological characteristics of acute and chronic pyelonephritis;</li><li>• To know the major clinical syndromes with which a patient with kidney disease may present;</li><li>• To know the major glomerular clinical syndromes;</li><li>• To know the difference of fibrosis in chronic pyelonephritis from that in chronic glomerulonephritis or chronic benign hypertension;</li></ul>	<ol style="list-style-type: none"><li>1. Glomerulonephritis: modern classification, etiology, pathogenesis, immunomorphological characteristics of different forms of glomerulonephritis;</li><li>2. Acute renal failure - necrotic nephrosis: causes, pathogenesis, morphological features, complications, consequences;</li><li>3. Chronic obstructive tubulopathy. Paraproteinemic nephrosis: pathogenesis, morphology, complications, consequences;</li><li>4. Tubulointerstitial nephritis: etiology, pathogenesis, pathological anatomy, complications, consequences;</li><li>5. Acute and chronic</li></ol>



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Objective	Content units
<ul style="list-style-type: none"> <li>To know the macroscopic difference between adenoma and renal cell carcinoma.</li> </ul>	<p>pyelonephritis: etiology, pathogenesis, pathological anatomy, complications, consequences;</p> <p>6. Nephrolithiasis: etiology, pathogenesis, pathological anatomy, complications, consequences.</p> <p>Interrelationships with pyelonephritis. Peculiarities of nephrolithiasis in children;</p> <p>7. Kidney tumors. Renal cell carcinoma. Causes, morphological characteristics.</p>
<p><b>Theme (chapter) 23.</b> Pathology of the male genital system. Sexually transmitted infections. Urinary bladder pathology</p>	
<ul style="list-style-type: none"> <li>To know the etiological factors in acute and chronic bacterial prostatitis;</li> <li>To know the causes and consequences of prostate tumors;</li> <li>To know the classification of testicular tumors. To compare the morphology of the two major types of testicular tumors from germ cells: seminomatous and nonseminomatous;</li> <li>To know the pathological and clinical characteristics of benign prostatic hyperplasia;</li> <li>To know the pathological features and clinical features of prostate cancer and the concept of classification and staging for prognosis;</li> <li>To know the acute and chronic inflammatory lesions of the urinary bladder;</li> <li>To identify the morphological features of urinary bladder cancer.</li> </ul>	<ol style="list-style-type: none"> <li>Benign prostatic hyperplasia (nodular hyperplasia): forms, morphological features, complications;</li> <li>Prostate cancer: frequency, causes, morphological features, complications;</li> <li>Testicular cancer: classification, morphological features, complications;</li> <li>Epididymal tumors, spermatic cords and testicular membrane, morphology;</li> <li>Syphilis: etiology, pathogenesis. Primary, secondary, tertiary syphilis. Congenital syphilis (early, late). Visceral syphilis. Pathological anatomy, complications, causes of death;</li> <li>Urinary bladder cancer: classification, morphological features, complications, causes of death.</li> </ol>
<p><b>Theme (chapter) 24.</b> Pathology of the female genital organs</p>	
<ul style="list-style-type: none"> <li>To know LSIL and HSIL, glandular and squamous cervical neoplasia;</li> <li>To know the difference between CIN 3 and invasive carcinoma;</li> <li>To know the classification of malignant ovarian</li> </ul>	<ol style="list-style-type: none"> <li>Glandular hyperplasia of the endometrium, morphological features, complications;</li> <li>Acute and chronic endometritis: causes,</li> </ol>



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<b>Objective</b>	<b>Content units</b>
<p>tumors, tumors associated with endometriosis;</p> <ul style="list-style-type: none"><li>• To know the significance of borderline ovarian tumors;</li><li>• To understand the classification of endometrial hyperplasia and the clinical significance of simple / complex hyperplasia with / without cytological atypia.</li></ul>	<p>pathogenesis, morphology, complications;</p> <ol style="list-style-type: none"><li>3. Uterine cancer: frequency, causes, precancerous processes, classification, morphological characteristics;</li><li>4. Peculiarities of cervical cancer: histological forms, peculiarities of the development of metastases, complications;</li><li>5. Ovarian cancer: frequency, causes, precancerous conditions, classification, morphological characteristics, histological forms, peculiarities of metastasis, complications;</li></ol>
<b>Theme (chapter) 25. Pathology of the mammary gland. Pathology of pregnancy, post-partum period and placenta</b>	
<ul style="list-style-type: none"><li>• To know the concept of acute and chronic mastitis;</li><li>• To know the histological and molecular classification of breast cancer;</li><li>• To know the definition and types of ectopic pregnancy</li><li>• To differentiate the complete and incomplete hydatidiform mole in terms of histology and clinical correlation;</li><li>• To know the most common precursor lesions of gestational trophoblastic disease.</li><li>• To know the changes of the placenta in eclampsia;</li><li>• To define the notions of placenta accreta, discreta, placenta praevia.</li></ul>	<ol style="list-style-type: none"><li>1. Acute and chronic mastitis: causes, pathogenesis, morphology, complications;</li><li>2. Fibrocystic mammary gland disease: classification, non-proliferative and proliferative forms, morphological features, complications;</li><li>3. Breast cancer: frequency, causes, precancerous conditions, classification, morphological characteristics, the peculiarities of the development of metastases;</li><li>4. Spontaneous abortion, premature labor: causes, morphological characteristics;</li><li>5. Trophoblastic diseases. Hydatidiform mole, morphological features, complications;</li><li>6. Choriocarcinoma: histogenesis, morphological characteristics, peculiarities of metastasis development;</li><li>7. Pathology of the placenta and</li></ol>



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Objective	Content units
	<p>fetal membranes, complications of childbirth and post-partum period;</p> <p>8. Birth trauma in a newborn, asphyxia of the newborn, intrauterine death of the fetus.</p>
<b>Theme (chapter) 26. Pathology of the endocrine glands</b>	
<ul style="list-style-type: none"> <li>• To know the morphological, molecular and clinical features of pituitary adenomas, including macroscopic and microscopic picture, manifestations related to the mass effect, endocrine manifestations related to the production of growth hormone, ACTH, prolactin;</li> <li>• To differentiate the main macroscopic, microscopic and clinical features of the following thyroid neoplasms: follicular adenoma, papillary, follicular, medullary carcinoma;</li> <li>• To know the most common causes of primary hyperparathyroidism;</li> <li>• To know the clinical features and pathogenesis of Graves' disease as a prototype of hyperthyroidism;</li> <li>• To correlate the pathogenesis of the different causes of Cushing's syndrome;</li> <li>• To know the morphological changes of different organs in diabetes mellitus: pancreas, small and large vessels, kidneys, retina.</li> </ul>	<ol style="list-style-type: none"> <li>1. Pituitary gland: acromegaly: etiology, pathogenesis, morphology, causes of death. Cushing's disease: etiology, pathogenesis, morphology, causes of death;</li> <li>2. Adipose-genital dystrophy: etiology, pathogenesis, morphology. Diabetes insipidus: etiology, pathogenesis, morphology;</li> <li>3. Adrenal glands: Addison's disease: etiology, pathogenesis, morphology. Tumors of the adrenal glands, types, morphological, complications;</li> <li>4. Thyroid gland: goiter (struma), classification. Hypothyroidism and atrophy, morphological features. Thyroid gland tumors, morphology, complications;</li> <li>5. Endocrine pancreas: diabetes: etiology, pathogenesis, anatomical pathology. Macro- and microangiopathy as a manifestation of diabetes mellitus, types of diabetic microangiopathy, morphology. Diabetic glomerulosclerosis. Complications of diabetes mellitus, causes of death. Peculiarities of the development of diabetes mellitus in children (Mauriac syndrome).</li> </ol>
<b>Theme (chapter) 27. Skin and soft tissue pathology. Pathology of the osteoarticular system</b>	
<ul style="list-style-type: none"> <li>• To compare the morphology of different skin rashes;</li> </ul>	<ol style="list-style-type: none"> <li>4. Skin rash: classification, morphological picture;</li> </ol>



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Objective	Content units
<ul style="list-style-type: none"> <li>• To know the morphological peculiarities of benign and malignant squamous tumors;</li> <li>• To know the morphological and biological peculiarities of basal cell carcinoma;</li> <li>• To know the morphological and biological peculiarities of melanoma;</li> <li>• To know the peculiarities of benign muscle tumors;</li> <li>• To know the malignancy criteria specific to uterine sarcomas and non-myometrial sarcomas.</li> <li>• To know the morphological changes in the formation of the bone callus;</li> <li>• To know the mechanism of ossification in degenerative processes.</li> <li>• To know the morphological changes in aseptic and infectious bone necrosis;</li> <li>• To know the nomenclature and morphology of bone tumors.</li> </ul>	<ol style="list-style-type: none"> <li>5. Squamous and basal cell carcinoma;</li> <li>6. Cutaneous melanoma;</li> <li>7. Degenerative muscle pathology;</li> <li>8. Muscle tumors: classification, morphology, clinical features, metastatic features.</li> <li>9. Tubular and spongy bone fractures: causes, consequences. Age changes of the osteoarticular system. Aseptic necrosis. Osteomyelitis</li> <li>10. Infectious, reactive and degenerative autoimmune arthritis, morphological changes and consequences;</li> <li>11. Tumors of bones and cartilage, classification, morphology, consequences.</li> </ol>
<b>Theme (chapter) 28. Central and peripheral nervous system pathology</b>	
<ul style="list-style-type: none"> <li>• To become familiar with the special terminology in the field of nervous system pathology;</li> <li>• To understand the basic pathogenetic mechanisms of neurological diseases;</li> <li>• To correlate the clinical and morphological characteristics of cerebrovascular diseases;</li> <li>• To know the process of stroke organization;</li> <li>• To know the role of thrombosis and embolism in the CNS infarction;</li> <li>• To explain the mechanism of hemorrhage in hemorrhagic infarction, to be able to differentiate with primary parenchymal hemorrhage.</li> </ul>	<ol style="list-style-type: none"> <li>1. Discirculatory pathology of the brain. Stroke, causes and consequences;</li> <li>2. Brain degenerative pathology: Alzheimer's disease: etiology, pathogenesis, morphological changes of the brain, complications;</li> <li>3. Amyotrophic lateral sclerosis: etiology, pathogenesis, morphological features, complications;</li> <li>4. Disseminated sclerosis: etiology, pathogenesis, morphology, complications. Encephalitis: classification, etiology, pathogenesis, morphology, complications. Tick-borne encephalitis.</li> </ol>
<b>Theme (chapter) 29. Tumors of the central nervous system. Primary and secondary tumors.</b>	
<ul style="list-style-type: none"> <li>• To know primary and secondary brain neoplasms;</li> </ul>	<ol style="list-style-type: none"> <li>1. Central nervous system tumors: classification,</li> </ol>



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<b>Objective</b>	<b>Content units</b>
<ul style="list-style-type: none"><li>To compare the clinical manifestations of volume formations and generalized intracranial pressure.</li></ul>	<p>morphology, consequences. Astrocytoma, ependymoma, oligodendroglioma, embryonal tumors;</p> <p>2. Neuroectodermal, meningovascular, vegetative and peripheral nervous system tumors. Schwann cell tumors, perineural fibroblasts or a combination of these two cell types;</p> <p>3. Metastatic tumors of the central nervous system. The most common metastatic tumors in the CNS.</p>
<b>Theme (chapter) 30. Sepsis</b>	
<ul style="list-style-type: none"><li>To know the concept of sepsis, the etiopathogenetic peculiarities, the etiological, clinical, morphopathological classification;</li><li>To know the morphological peculiarities of septicemia, septic shock, septicopyemia, chronic sepsis;</li><li>To know the peculiarities of infectious endocarditis as a specific form of sepsis, the interrelationships with rheumatic and atherosclerotic valvulopathies and congenital heart development defects, complications.</li></ul>	<p>1. Sepsis, morphological variants;</p> <p>2. Characteristic of the primary septic focus;</p> <p>3. Local and general lesions in septicemia and septicopyemia;</p> <p>4. Infectious endocarditis, evolution variants, morphological features.</p>

**VIII. PROFESSIONAL (SPECIFIC (SC)) AND TRANSVERSAL (TC) COMPETENCES AND STUDY FINALITIES**

✓ **Professional (specific) competences (PC)**

- PC1. The responsible execution of professional tasks with the application of the values and norms of professional ethics, as well as the provisions of the legislation in force;
- PC2. Adequate knowledge of the sciences about the structure of the body, physiological functions and behavior of the human body in various physiological and pathological conditions, as well as the relationships between health, physical and social environment;
- PC5. Interdisciplinary integration of the doctor's work in the team with the efficient use of all resources;



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- PC6. Conducting scientific research in the field of health and other branches of science.
- ✓ **Transversal competences (TC)**
- TC1. Autonomy and responsibility in the activity.
- ✓ **Study finalities**
- To demonstrate the ability to analyze the legitimacy of the development of structural lesions of organs and organ systems, applying basic anatomical-physiological knowledge, modern clinical-morphological and laboratory methods in order to establish the appropriate morphological diagnosis of various diseases and pathological processes.
- To demonstrate ability to correlate morphological lesions with clinical data.
- To demonstrate professionalism and high ethical standards in all aspects of medical practice, especially competence, honesty, integrity, empathy, respect for others, professional and social responsibility.
- To demonstrate the ability to acquire new information and data and critically assess their validity and applicability to professional decision-making, including the application of information technology to support clinical decision-making.

**IX. STUDENT'S SELF-TRAINING**

No.	Expected product	Implementation strategies	Assessment criteria	Implementation terms
1.	<b>Work with information sources</b>	Careful reading of lecture or the textbook material on the theme. Reading the questions on the theme, that requires a reflection on the subject. Refer to the list of additional information sources on the theme. Choose the source of additional information on the theme. Reading of the text entirely, carefully and writing down the essential content. Making generalizations and conclusions related to the importance of the theme/subject.	The ability to extract the essential; skills to interpret; the volume of work.	Throughout the semester
2.	<b>Working with the workbook</b>	To analyze the information and the images on the theme based on the material from lectures and textbook. Consistent	The volume of work, solving situational problems, the ability to draw conclusions.	Throughout the semester



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		<p>solving the tasks. Drawing conclusions at the end of each lesson. The verification of the aims of the lesson in question and assessment of their achievement.</p> <p>Searching for additional information, using e-mail addresses and additional bibliography.</p>		
3.	<b>Application of various learning techniques</b>		<p>The volume of work, the degree of penetration into the essence of various themes, the level of scientific argumentation, quality of conclusions, elements of creativity, demonstration understanding the problem, formation of personal attitude.</p>	<p>Throughout the semester</p>
4.	<b>Working with materials online</b>	<p>Self-assessment online, study of materials online on the WEBSITE of the department, expressing one's own opinions through the forum and chat.</p>	<p>The number and duration of entries on the SITE, the results of self-assessment.</p>	<p>Throughout the semester</p>
5.	<b>Preparation and presentation of research</b>	<p>Choice of the theme for research, making plan the research plan, provision of the terms of realization. Setting PowerPoint project / theme components, purpose, results, conclusions, practical applications, bibliography. Reviews of colleges. Reviews of professors and lecturers.</p>	<p>Volume of work, the degree of penetration into the essence of the theme of the project, the level of scientific argumentation, the quality of conclusions, elements of creativity, personal attitude formation, coherence of exposure and scientific correctness, graphic</p>	<p>Throughout the semester</p>

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			presentation, presentation method.

## X. METHODOLOGICAL SUGGESTIONS FOR TEACHING-LEARNING-ASSESSMENT

### ✓ Teaching and learning methods used

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

### Recommended learning methods

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

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- **Experiment** - Formulation of a hypothesis, based on known facts, on the process / phenomenon studied. Verifying the hypothesis by performing the processes / phenomena studied under laboratory conditions. Formulation of conclusions, deduced from arguments or findings.

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

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

✓ **Methods of assessment** (including the method of final mark calculation)

**Current:** frontal and / or individual control by:

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

At the Pathomorphology discipline, during two semesters of study, there are 4 tests consisting of 8 parts (4 computer tests and 4 practical skills), as follows:

**Test No. 1** (computer testing and practical skills): Introduction to pathomorphology. Reversible intra- and extracellular lesions (accumulations). Irreversible cellular lesions. Endogenous and exogenous pigments. Pathological calcinosis. Adaptation and compensation processes. Wound healing. Circulatory disorders (I). Circulatory (II).

**Test No. 2** (computer testing and practical skills): Acute and chronic inflammation. Immunopathological processes. Autoimmune diseases. Epithelial and nonepithelial tumors. Infectious diseases, generalities. Airborne infections. Tuberculosis. Pre- and perinatal pathology. Perinatal infections. Tumors of the hematopoietic system. Leukemias (leukoses) and lymphomas.

**Test No. 3** (computer testing and practical skills): Vascular pathology. Heart pathology. Pulmonary pathology. Pathology of the esophagus and stomach. Intestinal pathology. Intestinal infections. Diseases of the liver, gallbladder and pancreas.

**Test No. 4** (computer testing and practical skills): Kidney disease. Diseases of the male genital organs. Urinary bladder pathology. Sexually transmitted infections. Diseases of the female genital organs. Pathology of the mammary gland. Pathology of pregnancy, post-partum period and placenta. Pathology of the endocrine glands. Pathology of the skin, osteo-articular system and soft tissues. Central nervous system pathology.

At the end of each semester, the student is evaluated depending on the degree of completion of individual work, which is marked separately with grades from 0 to 10.

Thus, the formative assessment for each semester consists of 5 total tests (2 computer tests, 2 practical skills and individual work), each test is marked separately with grades from 0 to 10. The semester average is formed from the sum of the marks accumulated from tests practical skills and individual work during the semester of studies divided by 5.

The computer-based testing for each test consists of variants of 25 questions each (single choice and multiple choice). The student has a total of 25 minutes to answer the test. The



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evaluation is performed according to the criteria of the SIMU system of Nicolae Testemitanu State University of Medicine and Pharmacy of the Republic of Moldova.

The practical skills consist of identifying the name of the pathological processes and indications on 5 microscopic pieces for each of the test.

### **Final:** Exam

At the Pathomorphology discipline there are 2 passing exams at the end of the 5th and 6th semester. Each exam consists of a computer-based test of 50 tests in all themes from the respective semester, of which 40% are single choice and 60% multiple choices. The student has a total of 50 minutes to complete the test. The test is graded from 0 to 10.

The subjects for exams (tests) are approved at the meeting of the department and are brought to the attention of students with at least one month until the session.

**The final mark** consists of 2 components: the semester average grade consisting of 2 computer tests taken at the pathology department 2 oral tests practical skills and individual work (coefficient 0.5). Computer testing held in the academic assessment center of Nicolae Testemitanu State University of Medicine and Pharmacy of the Republic of Moldova, coefficient 0.5.

### **Method of mark rounding at different assessment stages**

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

The average annual mark and the marks of all stages of final examination (computer assisted, test, oral) - are expressed in numbers according to the mark scale (according to the table), and

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the final mark obtained is expressed in number with two decimals, which is transferred to student's record-book.

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

## **XI. RECOMMENDED LITERATURE:**

### *A. Compulsory:*

1. Lecture materials
2. Ie. Zota, V. Vataman. General morphopathology, Chişinău, 2014
3. Vinay Kumar, Abul K. Abbas, Jon C. Aster. Robbins Basic Pathology, tenth edition, 2018
4. Harsh Mohan. Textbook of Pathology, 7th edition, 2015.

### *B. Additional:*

1. Jones Bruce. Atlas of Gross Pathology With Histologic Correlation, 2009.
2. Edward C. Klatt. Robbins and Cotran – Atlas of pathology – international edition, 2014.
3. Noel Weidner, Richard Cote, Saul Suster, Lawrence Weiss. Modern Surgical Pathology 2nd Edition, 2009
4. Molavi Diana. The Practice of Surgical Pathology, 2008
5. CD-O International Classification of Diseases for Oncology.
6. Rosai, Juan, Lauren V. Ackerman, and Juan Rosai. Rosai and Ackerman's Surgical Pathology. Edinburgh: Mosby, 2011. Internet resource.
7. Steven G. Silverberg. Silverberg's Principles and Practice of Surgical Pathology and Cytopathology, 2-Volume Set. Churchill Livingstone/Elsevier, 2006.
8. Julian L. Burton, Guy Ruttly. The Hospital Autopsy 3rd Edition: A Manual of Fundamental Autopsy Practice (Hodder Arnold Publication) Hardcover, 2010.
9. Alan Stevens, James S. Lowe, Ian Scott. Core Pathology, 2009.

### *C. WEB:*

1. General Informations: [www.path2.sote.hu](http://www.path2.sote.hu)
2. Online available case center: <http://casecenter-korb2.sote.hu/casecenter/>
3. Panoramic Viewer free download: <http://www.3dhistech.com/>
4. Practice test: <http://casecenter-korb2.sote.hu/espractice/>
5. <http://www.pathologyoutlines.com/>