

EUROPEAN MEDICAL UNIVERSITY

“APPROVED”

Vice-rector of EMU,
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SYLLABUS OF THE EDUCATIONAL DISCIPLINE «PATHOMORPHOLOGY»

Cycle of Higher Education:	second cycle of higher education (Master's degree)
Field of Study:	22 «Healthcare»
Specialty	221 Dentistry
Educational qualification	Master of Dentistry
Professional qualification	doctor
Educational program	EPP «Dentistry» 2023
Department	Department of Fundamental Disciplines
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Compilers of the syllabus	prof. Mykola FEDCHENKO Lecturer Natalia TERESHCHENKO

1. Status and structure of the discipline

Discipline status	Mandatory
Discipline code in EPP/place of discipline in EPP	EC 15, professional training discipline
Course/semester	2 -3 course (4-5 semester)
Course volume (total number of hours/ number of ECTS credits)	180 hours / 6 ECTS credits
Number of Chapter :	2
Number of content sections	6
Distribution by types of training and hours of study	Lectures 16 hours Practical classes 74 hours Independent work 90 hours
Language of instruction	English
Form of education	Full-time
Type of final control	Exam

Prerequisites. Pathomorphology as an academic discipline is based on the knowledge acquired by students in such disciplines as medical biology, anatomy, histology and embryology, and integrated with these disciplines; sets the foundations for students' study of physiology, biochemistry, pathological physiology, propaedeutics of clinical disciplines, which involves the integration of teaching with these disciplines and the formation of skills to apply knowledge in pathomorphology in the process of further education and professional activity.

Postrequisites: knowledge, skills and abilities acquired by students after completing the study of the discipline "Pathomorphology" create theoretical foundations for mastering the following clinical disciplines: therapeutic dentistry, orthopedic dentistry, surgical dentistry.

2. Characteristic of the educational discipline

Objectives and definition of the educational discipline:

The objectives of teaching the discipline "Pathomorphology" is to study the general laws of development of cell pathologies, pathological processes and diseases, that is, general human pathology; study of the structural basis of all varieties of human diseases, the specifics of each disease, the creation of anatomy of a sick person (clinical pathomorphology); formation of a holistic view of the structural basis of diseases, their etiology, pathogenesis for understanding the theoretical foundations of medicine, a more in-depth knowledge of clinical manifestations of diseases.

Pathomorphology is an academic discipline that provides understanding of the structural basis of diseases and pathological processes, highlights structural changes in organelles, cells, intercellular matrix, tissues and organs of a sick person, as well as the causes and mechanisms of death of patients. The macroscopic and microscopic signs of general pathological processes (dystrophies, circulatory disorders, etc.), pathology of various organs, diseases of various etiologies (non-infectious, infectious and parasitic, etc.) are described in details.

3. Tasks of educational discipline «Pathomorphology».

- 1) study of typical general pathological processes, the totality of which determines the morphological manifestations of diseases; become able to define various pathologies; briefly describe the etiology and pathogenesis, formulate the basic principles of classification, describe the macro- and microscopic picture taking into account age-related characteristics, name the results, complications and causes of death;
- 2) become able to explain the patterns of development of various pathologies, interpret the features of macro- and microscopic changes depending on the etiology, form and stage of the disease; conduct differential diagnosis, explain the nature of possible complications and outcomes that have developed in tissues;
- 3) application of knowledge in practice: to demonstrate mastery of the terminological apparatus of the discipline, to conduct macro- and microscopic description of pathological changes, to mark the detected pathological changes on microphotographs, to solve situational clinical problems using knowledge in pathomorphology;
- 4) express opinions, evaluating ideas and forming conclusions: forming own conclusions based on the results of macro- and microscopic examination, expressing opinions on the functional significance of the detected morphological changes, describing the impact of structural changes in the affected tissue on other organs, systems and the body as a whole;
- 5) become able to continue further independent study: to use knowledge of pathomorphology to master post-qualifying clinical disciplines.
- 6) compare morphological and clinical manifestations of diseases, preparation of documentation of the pathology department of a medical institution.

4. Competencies and Program learning outcomes.

General competencies (GC): GC 1-3, GC 6, GC7, GC 9, GC 13.

GC 1	The ability to think abstractly, analyze and synthesize. The ability to learn and develop.
GC 2	Knowledge and understanding of the subject area and understanding of the multi-level nature of professional activity.
GC 3	Ability to apply professional knowledge and practical skills in medical practice
GC 6	Skills in using information and communication technologies
GC 7	Ability to search, process and analyze information from various sources
GC 9	Ability to identify, pose, and solve problems.
GC 13	The ability to act socially responsible and conscious.

Special (professional, subject) competencies (SC): SC 1-3, SC 5, SC 7, SC 11, SC 14, SC 15, SC 17

SC 1	The ability to store patient medical information and analyze clinical data.
SC 2	Ability to interpret the results of laboratory and instrumental studies.
SC 3	Ability to diagnose: determine preliminary, clinical, final, concomitant diagnosis, emergency conditions.
SC 5	Ability to design the process of providing medical care: determine approaches, plans, types and principles of treatment of diseases of the organs and tissues of the oral cavity and maxillofacial region.
SC 7	The ability to determine the tactics of managing patients with diseases of the organs and tissues of the oral cavity and maxillofacial region with concomitant somatic diseases.
SC 11	Ability to determine tactics, methods, and provide emergency medical care.

SC 14	Processing of state, social and medical information
SC 15	Processing of state, social and medical information
SC 17	Ability to legally support one's own professional activities.

Program learning outcomes (PLO): PLO 1-4.

PLO 1	To highlight and identify the leading clinical symptoms and syndromes (according to list 1), using preliminary data from the patient's history and disease, objective examination, to establish a probable nosological or syndromic preliminary clinical diagnosis of a dental disease (according to list 2)
PLO 2	Collect information about the patient's general condition, assess the patient's psychomotor and physical development, the condition of the maxillofacial organs, and evaluate information regarding the diagnosis based on the results of laboratory and instrumental studies (according to list 5).
PLO 3	To prescribe and analyze additional (mandatory and optional) examination methods (laboratory, radiological, functional and/or instrumental) according to list 5, patients with diseases of the organs and tissues of the oral cavity and maxillofacial region for differential diagnosis of diseases (according to list 2).
PLO 4	Determine the final clinical diagnosis in compliance with relevant ethical and legal norms, by making a reasoned decision and logical analysis of the obtained subjective and objective data of clinical, additional examination, and differential diagnostics under the supervision of the head physician in a medical institution (according to list 2.1).

5. Content of the discipline

List of lecture topics

№	Topic name	Number of hours
Chapter 1: "General Pathomorphology"		
1	Subject and objectives of Pathomorphology. Methods of pathomorphological research. Main stages of development of Pathomorphology.	2
2	Alteration. Mechanisms of trophism and metabolic disorders.	2
3	Violation of ion-osmotic and water balance. Circulatory disorders: hyperemia, ischemia, infarction, bleeding, hemorrhage, stasis, plasmorrhagia. Shock. Lymphatic circulation disorders. Violation of hemostasis. Thrombosis, DIC syndrome. Embolism	2
4	General theory of tumors. Classification of tumors. Epithelial and mesenchymal tumors.	2
Total per semester		8
Chapter 2: "Special Pathomorphology"		
5	General concepts of human infectious pathology. Classification of infectious diseases. Viral diseases. Bacterial diseases.	2
6	Diseases of the maxillofacial region: stomatitis, caries, pulpitis.	2
7	Diseases of the maxillofacial region: periodontitis. Diseases of the gums and periodontium: gingivitis, periodontitis, periodontosis, periodontolysis.	2
8	Tumors of the maxillofacial region	2
Total per semester		8
Together for 2 semesters		16

List of practical training topics

№	Topic name	Number of hours
Chapter 1: "General Pathomorphology"		
Content section 1. Subject and tasks of pathomorphology. Methods of pathomorphological studies. Morphology of damage and death of cells and tissues. Disorders of blood and lymph circulation.		
1	Introduction to Pathomorphology. Subject and objectives of Pathomorphology. Main stages of development of Pathomorphology. Methods of pathoanatomical diagnosis. Methods of pathomorphological research.	2
2	Morphological changes in cells as a response to stress and toxic damage (parenchymal/cellular dystrophies). Cellular dystrophies: hyaline-dropsy, hydropic, fatty	2
3	Morphological changes in the stroma as a response to injury (stromal vascular dystrophies). Pathomorphology of the accumulation of complex proteins (hyalinosis) and lipids. Exhaustion of the body.	2
4	Морфологічні зміни стромы як відповідь на пошкодження (стромально-судинні дистрофії). Патоморфологія накопичення складних білків (гіаліноз) та ліпідів. Виснаження організму..	2
5	Fundamentals of thanatology. Necrosis. Clinical and morphological forms of necrosis. Selective death of specialized cells: pathogen-induced apoptosis, selective cell death induced by the immune system, and cell destruction by activated complement	2
6	Violations of ion-osmotic and water balance, acid-base status. Acute systemic circulatory disorders (acute coronary insufficiency, shock) and systemic circulatory disorders in chronic heart failure and their consequences. Regional circulatory disorders (hyperemia, ischemia, plasmorrhagia, bleeding and hemorrhage). Violations of lymph formation and circulation	2
7	Hemostasis disorders: hemorrhagic syndrome, thrombosis, DIC syndrome. Embolism. Pulmonary embolism, thanatogenesis	2
8	Final lesson: "Alteration. Disturbances of blood and lymph circulation." Autopsy. Practical skills.	2
Content section 2. Inflammation. Immunopathological processes. Regeneration, adaptation and compensation processes.		
9	Inflammation: causes, morphogenesis. Pathomorphology of exudative inflammation (3 hours).	2
10	Proliferative (productive) inflammation: with the formation of pointed warts, around parasitic animals, intermediate productive inflammation, granulomatous inflammation. Specific proliferative inflammation	2
11	Molecular and pathomorphological bases of the immune response. Immune system in the prenatal and postnatal period. Pathology of immune processes: amyloidosis, hypersensitivity reactions, transplant rejection reaction. Immune deficiency. Autoimmune diseases	2
12	Regeneration. Structural foundations of physiological adaptation of organs and cells. Morphology of cell adaptation processes. Compensatory and adaptive processes	2
13	Final lesson: "Inflammation. Immunopathological processes. Regeneration, adaptation and compensation processes." Autopsy. Practical skills.	2

Content section 3. Tumors of various localizations		
14	Oncogenesis. Anatomical and microscopic features and types of growth of benign and malignant tumors. Morphological characteristics of the main stages of development of malignant tumors. Clinical and morphological nomenclature of tumors. Tumors from the epithelium: benign organ-nonspecific epithelial tumors, cancer (developmental features, metastasis, histological forms)	2
15	Benign and malignant non-epithelial (mesenchymal) tumors. Sarcoma: features of development and metastasis. Tumors of fibroblastic, myofibroblastic and fibrohistiocytic genesis. Tumors from adipose and muscle tissue, tumors from blood vessels	2
16	Melanocytic tumors. Features of childhood tumors. Embryonic tumors. Germ cell tumors. Teratomas and teratoblastomas. "Adult-type" tumors. Tumors of the central nervous system (astroglial, oligodendroglial, ependymal, neuronal, meningeal), cranial and paraspinal nerves	2
17	Tumors of hematopoietic tissue. Tumors of lymphoid tissue.	2
18	Final lesson: "Tumors of various localizations." Autopsy. Practical skills	2
Total per semester		36
Chapter 2: "Special Pathomorphology"		
Content section 4. Diseases of the cardiovascular system. Systemic connective tissue diseases with autoimmune diseases. Vasculitis. Respiratory diseases.		
1	Arteriosclerosis and atherosclerosis	2
2	Hypertension and arteriosclerosis. Hypertensive disease (essential hypertension) and symptomatic arterial hypertension.	2
3	Coronary heart disease	2
4	Systemic connective tissue diseases with autoimmunity (rheumatic diseases): rheumatism, systemic lupus erythematosus, rheumatoid arthritis, systemic scleroderma, dermatomyositis, Bechterew's disease.	2
5	Acute inflammatory lung diseases. Chronic nonspecific lung diseases.	2
6	Final lesson. Practical skills: "Diseases of the cardiovascular system. Diseases of the respiratory system"	2
Content section 5. Diseases of the digestive system. Diseases of the genitourinary system. Diseases of the endocrine system. Diseases of the musculoskeletal system;		
7	Diseases of the esophagus, stomach and intestines, liver and pancreas	2
8	Kidney diseases	2
9	Diseases of the endocrine glands. Hypothalamic-pituitary disorders. Pathology of the adrenal glands. Pathology of the thyroid gland. Pathology of the endocrine apparatus of the pancreas	2
10	Final lesson. Practical skills: "Diseases of the digestive system. Diseases of the genitourinary system. Diseases of the endocrine system. Diseases of the musculoskeletal system"	2
Content section 6 Pathomorphology of the infectious process. Sepsis		
11	General concepts of human infectious pathology. Classification of infectious diseases. Viral airborne infections. HIV infection and AIDS.	2
12	Intestinal infectious diseases: cholera, typhoid fever, dysentery.	2
13	Childhood infections: diphtheria, scarlet fever, meningococcal infection.	2
14	uberculosis. Syphilis. Sepsis	2

15	Stomatitis (acute aphthous stomatitis, herpetic, ulcerative-necrotic, candidal). Changes in SOPR in case of intoxication with heavy metal salts. Diseases of hard tooth tissues (caries, non-carious lesions), pulpitis, periodontitis, periostitis, osteomyelitis of the jaw bones. Periodontal diseases, inflammatory diseases of the lips, tongue, gums, oral mucosa. Malformations of the face, neck and oral cavity organs	2
16	Tumors and tumor-like processes of the oral cavity and jaw bones: odontogenic and non-odontogenic tumors, papilloma, oral cavity cancer, precancerous changes (leukoplakia), non-epithelial tumors, jaw bone tumors (osteoblastoclastoma, osteoma, osteosarcoma, fibrous dysplasia, cherubism), jaw cysts (follicular cyst, keratocyst, eruption cyst)	2
17	Salivary gland diseases - clinical and morphological features of the salivary glands, inflammatory diseases, autoimmune diseases, salivary stones, tumors and tumor-like diseases of the salivary glands	2
18	Final lesson: "Pathomorphology of the dento-maxillary system. Sepsis." Practical skills.	2
19	Final lesson for sections 1, 2: "Pathomorphology" (testing).	2
Total per semester		38
Total for 2 semesters		74

List of topics for independent work

№	Topic name	Number of hours
Content section 1		
1	Elements of ultrastructural pathology of the cell. Cell-matrix interactions..	5
2	General characteristics of thesaurismoses (hereditary enzymeopathies).	5
3	Copper metabolism disorders. Hepatocerebral dystrophy (Wilson's disease)	5
4	Disorders of coagulation and hemostasis – thrombocytopathy and thrombocytopenia: causes, mechanisms of development, morphological changes. Hemophilia	5
Content section 2.		
5	Nonspecific granulomatous diseases. Sarcoidosis	5
6	Congenital immunodeficiency syndromes	5
Content section 3.		
7	Plasma cell tumors (myeloma, solitary plasmacytoma), primary Waldenström macroglobulinemia, Franklin heavy chain disease	6
8	Preparation for the final lesson in section 1 "General Pathomorphology"	6
Section 2. "Special Pathomorphology"		
Content section 4.		
9	Vasculitis. Nonspecific aortoarteritis (Takayasu disease). Temporal arteritis (Horton's disease); periarteritis nodosa; Wegener's granulomatosis. Thromboangiitis obliterans (Buerger's disease).	5
10	Rheumatoid arthritis. Ankylosing spondylitis. Systemic lupus erythematosus. Systemic scleroderma. Dermatomyositis. Sjögren's syndrome.	5
Content section 5		

11	Central nervous system diseases. Alzheimer's disease. Amyotrophic lateral sclerosis. Multiple sclerosis. Tick-borne encephalitis	6
12	Kidney tumors (benign tumors, Wilms tumor, renal cell carcinomas).. Renal pelvis cancer	5
13	Parathyroid glands. Hyperparathyroidism. Parathyroid osteodystrophy. Hypoparathyroidism.. Pathology of the endocrine apparatus of the pancreas. Hypothalamic-pituitary disorders	5
14	Musculoskeletal system diseases (parathyroid osteodystrophy, osteopetrosis, Paget's disease, fibrous dysplasia, osteomyelitis, joint diseases, muscular dystrophies, myasthenia gravis). Hyperparathyroidism. Paget's disease:	5
15	Diseases of the male reproductive system	5
Content section 6.		
16	Pathomorphology of viral, bacterial (salmonellosis, yersiniosis) and parasitic diseases (malaria, balantidiasis, amebiasis, trichinosis, echinococcosis, cysticercosis, opisthorchiasis, schistosomiasis)	6
17	Preparation for the final lesson in Sections 1, 2 in the academic discipline "Pathomorphology"	6
Разом		90

The independent work of the student involves preparation for practical classes and the final class, mastering topics for independent work, writing a medical history, preparing abstracts, presentations, tables. The control of mastering the topics of practical classes and independent work is carried out during practical classes and the final class and exam in the discipline.

Individual work includes the study of scientific literature, preparation of reviews on the topics provided for presentation, scientific and practical research, participation in specialized competitions, scientific and practical conferences, competitions of research papers.

Methodological recommendations for practical classes, independent work, and lecture materials are posted on the department's website.

Route for receiving materials: Website of EMU/Student / Department of Fundamental Disciplines with a course of traditional and alternative medicine/ Educational and methodological support of the Department/ Pathomorphology/ or follow the link Department of fundamental disciplines with a course in traditional and alternative medicine, discipline " Pathomorphology". Materials are accessed from the student's Office 365-based corporate account.

6. Forms and methods of monitoring learning success

Current control in practical classes	Methods: individual oral survey, structured written works, test tasks with the choice of correct answers.
Control of mastering the thematic section of the discipline in intermediate control classes	Methods: oral or written survey, electronic testing, <i>methods of self-control and self-assessment</i> .
Final semester control	According to the regulation on control measures in EMU (regulation of EMU)
Final control of the discipline - <i>exam</i>	Methods: by exam cards in the form of an oral exam, monitoring of acquiring of practical skills (According to the Regulation on control measures in EMU (Regulation of EMU)).
Tools for diagnosing learning success	Theoretical questions, tests, clinically oriented situational tasks, practical tasks, demonstration of practical skills.

7. Evaluation criteria

Knowledge assessment is carried out according to regulation on control measures in EMU ([regulation of EMU](#)).

Current control	According to the four-point system of traditional grades: 5 "Excellent", 4 "Good", 3 "Satisfactory", 2 "Unsatisfactory"
Control of practical skills	According to the four-point system of traditional grades
Exam	Based on a 200-point scale (the sum of points for the current academic activity of the student, the result of passing the exam and for successful completion of an individual task, if any) Credited: 120 to 200 points Not credited: less than 120 points (see Rating scale)
Final control for the discipline	The final control of students' academic performance is carried out after completing the study of the discipline and is implemented in the form of an exam.
Discipline assessment:	The score on the discipline is determined based on the results of assessment of current activities and is expressed using a fourpoint scale : ("Excellent", "Good", "Satisfactory", "Unsatisfactory"), multi-point scale and ECTS. The assessment in the discipline consists of an assessment of the current academic performance and the result of passing the exam (in points), which is set when evaluating theoretical knowledge and practical skills in accordance with the list defined by the discipline program. The number of points that the applicant scored for current academic.

	performance in the discipline is defined as the arithmetic mean of the number of points that the applicant received during the study of the discipline (practical, seminar, laboratory classes, etc.). The resulting value of the average traditional rating is converted to points according to the scale of conversion of traditional ratings to rating points. The maximum number of points is 200.
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Matching grades on a 200-point scale, a 4-point (traditional) scale, and ECTS scale

On a 200-point scale	Rating on a 4-point scale
180–200	Excellent
140–179	Good
120–139	Satisfactory
0–119	Unsatisfactory

On a 200-point scale	ECTS evaluation
192–200	A
172–191	B
148–171	C
128–147	D
120–127	E
0–119	F

Discipline/course policy

The student has the right to receive high-quality educational services, access to up-to-date scientific and educational information, qualified advice during the study of the discipline and mastering practical skills. The policy of the department in the provision of Educational Services is student-centered, based on the regulatory documents of the Ministry of Education and the Ministry of Health of Ukraine, the Charter of the EMU and the procedure for providing educational services regulated by the regulation on the organization of the educational process in the EMU and the principles of academic integrity.

Compliance with the EMU schedule, safety precautions in the classroom.

Requirements for preparing for practical classes.

Students should arrive at classes on time, without being late. A student who is more than 10 minutes late for classes is not allowed in and must work it out in accordance with the established procedure. During practical classes, the student must wear a work uniform (medical gown, cap).

Students who do not have a work uniform are not allowed to attend classes. The student must follow the safety rules during practical classes and while staying in the Department's premises. When discussing theoretical issues, students should demonstrate tolerance, politeness and respect for their colleagues and the teacher; when performing practical tasks, the workplace should be kept in order and cleaned after completing practical work.

Use of mobile phones and other electronic devices. The use of mobile phones and other electronic devices in the classroom is not allowed, only during Distance Learning, provided that it is technically necessary.

Academic integrity. When studying the discipline, the student should be guided by the following regulations: on academic integrity of EMU ([regulation of EMU](#)). In case of violation of the regulations of academic integrity during the current and final controls, the student receives a grade of "2" and must work it out to the teacher in accordance with the established procedure.

Regulation on control measures in EMU ([Regulation of EMU](#)).

Skipping classes. Missed classes should be worked out in accordance with the procedure established in the regulations on control measures in the EMU ([regulation of EMU](#)) during the time determined by the work schedule (Department of fundamental disciplines with a course in traditional and alternative medicine) to the teacher on duty. To work out a missed lesson the student must pass a test and answer in writing or verbally the question on the topic of the lesson.

Procedure for admission to the final control in the discipline is given in the regulations on control measures and regulations on the organization of the educational process in the EMU (regulation of EMU) and regulations on control measures in the EMU (regulation of EMU). Students who do not have missed not worked out practical classes and lectures and have received an average traditional grade of at least "3" are allowed to participate in the final control.

Additional individual points. Points are awarded subject to the mandatory participation of the head, head teacher and teacher. These points are encouraging and are added once to the total score of the current academic performance and the result of passing the comprehensive exam. Their total number for one student should not exceed 10, and the final amount of points for an academic discipline should not exceed 200 points.

Individual tasks include:

- 1) writing essays and creating multimedia presentations with reports at meetings of the student scientific group of the department – 3 points;
- 2) participation in the creation of tables, graphological structure, posters on the topics of practical classes – 2 points;
- 3) participation in the student competition in the discipline at the First Stage – 1 point;
- 4) participation/prize-winner of the All-Ukrainian student competition in the discipline - 7/10 points;
- 5) author or co-author of abstracts/article – 2/5 points;
- 6) author or co-author of an oral/information stand report at a scientific conference – 6/3 points;
- 7) author of a student scientific paper accepted for participation or awarded by a diploma of I-III degree in the All – Ukrainian competition of student scientific papers at Stage II - 8 (participation) or 10 (diploma) points.

Resolving conflict issues. If there are misunderstandings and complaints against the teacher due to quality of educational services provided, knowledge assessment, and other conflict situations, the student must first report his/her claims to the teacher. If the conflict issue is not resolved, the student has the right to submit an appeal to the head of the department in accordance with the regulations on consideration of applications from applicants for higher education in EMU (regulation of EMU), Regulations on consideration of applications, complaints, and proposals of students in EMU (regulation of EMU), Regulations on meeting the requirements of the organization of the educational process (regulation of EMU), Regulation on the appeal of the results of the final control of knowledge of applicants for higher education in EMU (regulation of EMU), Regulations on safe educational environment in EMU (regulation of EMU).

Policy in the context of distance learning. The procedure for distance learning is regulated by regulation of EMU. The main training platforms for conducting training sessions are Microsoft Teams, Zoom. The procedure for conducting practical classes and lectures, working out and consultations during Distance Learning is published on the Department's Web page Department of fundamental disciplines with a course in traditional and alternative medicine.

Feedback from the teacher is provided directly during the lesson and/or consultation, and is also possible via email (in case of force majeure) during working hours.

Training resources

Educational and methodological support of the discipline is published on the website of the Department of fundamental disciplines with a course in traditional and alternative medicine. Consultations are held according to the consultation schedule.

Schedule and distribution of groups by teacher are published on the Department's Web page (Department of fundamental disciplines)

Questions for intermediate and final control of the discipline are published on the Department's Web page (Department of fundamental disciplines)

8. Recommended literature

1. Sorokina I.V., Markovsky V.D., Halata D.I. Pathomorphology: Textbook - 2nd edition. K., 2020. - 328 p. ISBN 978-617-505-738-4.
2. Kumar V. Robbins Basic Pathology. 9th Edition / Vinay Kumar, Abul Abbas, Jon Aster. – Elsevier. – 2015. – 952 p.
3. Kumar V. Robbins Basic Pathology / Kumar V., Abbas A.K., Aster J.C. – Canada: Elsevier Health Sciences, 2013 – 910 p.
4. Modern Surgical Pathology. 2 edition / N. Weidner, R.J. Cote, S. Suster, L.M. Weiss. – Elsevier. – 2009. – 2233 p.
5. Mohan H. Textbook of pathology 6 edition / H. Mohan. – India, New Delhi: Jaypee Brothers Medical Publishers (P) Ltd. - 2010. – 933 p.
6. Neville B. Neville's Oral and Maxillofacial Pathology – Middle East Adapted Reprint – 1 st Edition/ B. Neville. – Elsevier India. – 2017. – 558 p.
7. Regezi Regezi J. Oral Pathology: Clinical Pathologic Correlations. 7th Edition /Joseph Regezi, James Sciubba, Richard Jordan. – Elsevier. – 2015. – 496 p.
8. Sivapathasundharam B. Shafer's Textbook of Oral Pathology. 8th Edition / B Sivapathasundharam. –Elsevier India. – 2016. – 794 p.

Information resources:

1. Testing Center - database of license test tasks "Krok-1"
2. <http://library.med.utah.edu/WebPath/webpath.html>.
3. <http://www.webpathology.com/>
4. <https://www.geisingermedicallabs.com/lab/resources.shtml> .

Responsible for the course _____

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