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**Federal State Autonomous Educational Institution of Higher Education
PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA
NAMED AFTER PATRICE LUMUMBA
RUDN University**

Institute of Medicine

educational division (faculty/institute/academy) as higher education program developer

COURSE SYLLABUS

PATHOLOGICAL ANATOMY, CLINICAL PATHOLOGICAL ANATOMY

course title

Recommended by the Didactic Council for the Education Field of:

31.05.01 GENERAL MEDICINE

field of studies / speciality code and title

The course instruction is implemented within the professional education programme of higher education:

GENERAL MEDICINE

higher education programme profile/specialisation title

2026

1. COURSE GOAL(s)

The course "Pathological anatomy, clinical pathological anatomy" is included in the program of the specialty "General Medicine" in the direction of the 31.05.01 "General Medicine" and is studied in the 5th, 6th semesters of the 3rd course. The discipline is implemented by the Department of Pathological Anatomy. The discipline consists of 14 sections and 42 topics and is aimed at studying morphological changes in organs and systems in diseases.

The purpose of mastering the course for a student is to acquire knowledge about the structural foundations of diseases, study the most typical, characteristic changes at the macro- and microscopic levels to comprehend the theoretical foundations of medicine, more in-depth study of the clinic and use the knowledge gained in the work of a general practitioner.

2. REQUIREMENTS FOR LEARNING OUTCOMES

The learning outcome of the course "**Pathological anatomy, clinical pathological anatomy**" is aimed at developing the following competencies in students:

GPC-5, PC-2

Table 2.1. List of competences that students acquire through the course study

Competence code	Competence descriptor	Competence formation indicators (within this course)
GPC-5	Being able to assess morpho-functional, physiological conditions and pathological processes in the human body to solve professional tasks	GPC-5.1 Masters the algorithm for clinical, laboratory and functional diagnostics when solving professional problems. GPC-5.2. Being able to evaluate the results of clinical, laboratory and functional diagnosis when dealing with professional tasks, including using artificial intelligence technology. GPC-5.3. Being able to determine morpho-functional, physiological states and pathological processes of the human body.
PC-2	Capable of examining a patient to establish a diagnosis	PC-2.7. Able to carry out differential diagnosis with other diseases/conditions, including emergencies, and also establish a diagnosis taking into account the current international statistical classification of diseases and health problems (ICD).

3. COURSE IN HIGHER EDUCATION PROGRAMME STRUCTURE

The course refers to the core/variable/elective component of (B1) block of the higher educational programme curriculum.*

* - Underline whatever applicable.

Within the higher education programme students also master other (modules) and / or internships that contribute to the achievement of the expected learning outcomes as results of the course study.

Table 3.1. The list of the higher education programme components/disciplines that contribute to the achievement of the expected learning outcomes as the course study results

Competence code	Competence descriptor	Previous courses/modules*	Subsequent courses/modules*
GPC-5	Being able to assess morpho-functional, physiological conditions and pathological processes in the human body to solve professional tasks	Biochemistry; Normal physiology; Biology; Microbiology, virology; Propaedeutics of internal diseases; Chemistry; Bioorganic chemistry; Anatomy; Histology, Embryology, cytology;	Obstetrics and Gynecology; Oncology, radiation therapy; Molecular genetic methods; Methods of microbiological diagnostics; Pathophysiology; Anesthesiology, intensive care, intensive care; Ophthalmology; Methods of cell biology and histology; Topographic anatomy and operative surgery; Forensic medicine; Maxillofacial surgery; Medical forensics; Otorhinolaryngology; Pediatrics;

Competence code	Competence descriptor	Previous courses/modules*	Subsequent courses/modules*
PC-2	Capable of examining a patient to establish a diagnosis	Propaedeutics of internal diseases; Microbiology, virology; Molecular genetics in practical biology and medicine**;	Autopsy course; Surgical practice: Assistant Surgeon; Assistant physician of the therapeutic profile: assistant physician of the therapist; General medical practice: assistant physician at an outpatient clinic; Obstetric and gynecological practice: obstetrician's assistant; Obstetric and gynecological practice: gynecologist's assistant; General medical practice: Assistant Pediatrician; Dermatovenerology; Neurology, medical genetics, neurosurgery; Ophthalmology; Faculty Surgery; Occupational diseases; Hospital therapy; Endocrinology; Outpatient therapy; Hospital surgery, pediatric surgery; Pediatrics; Obstetrics and Gynecology; Anesthesiology, intensive care, intensive care; Oncology, radiation therapy; Otorhinolaryngology; Reproductive health; Traumatology, orthopedics; Faculty therapy; Maxillofacial surgery; General medical skills; Urgent conditions; Urology; Infectious diseases; Psychiatry, medical psychology; Allergology; Pathophysiology; Endoscopic urology; Telemedicine; Clinical Dentistry; Current issues of neonatology**; Topical Issues of Neonatology**; Cardiology in quests; Molecular genetic methods; Methods of microbiological diagnostics; Evidence-based medicine; Autopsy course;

* To be filled in according to the competence matrix of the higher education programme.

4. COURSE WORKLOAD AND ACADEMIC ACTIVITIES

The total workload of the course "**Pathological anatomy, clinical pathological anatomy**" is «7» credits (252 academic hours).

Table 4.1. Types of academic activities during the periods of higher education programme mastering (**full-time training**)*

Type of academic activities	Total academic hours	Semesters/training modules	
		5	6
<i>Classroom learning academic hours</i>	<i>175</i>	<i>90</i>	<i>85</i>
including:			
Lectures (LC)	35	18	17
Laboratory works (LW)	140	72	68
Seminars (workshops/tutorials) (S)			
<i>Self-studies</i>	<i>32</i>	<i>27</i>	<i>5</i>
<i>Evaluation and assessment (exam/passing/failing grade)</i>	<i>45</i>	<i>27</i>	<i>18</i>
Course workload	academic hours	252	144
	credits	7	4

5. COURSE MODULES AND CONTENTS

Table 5.1. Content of the discipline (module) by type of academic activity

Course module title	Course module contents (topics)	Academic activities types
Module 1 Pathology of cells and tissues.	1.1 Reversible cell injury. Pathology of protein metabolism. Types of cell injury. Concepts of parenchymal and mesenchymal dysproteinoses. Cellular swelling and vacuolar degeneration. Mucoïd swelling. Fibrinoid swelling. Hyalinosis. Amyloidosis.	LW
	1.2 Pathology of fat and mineral metabolism. Morphology of lipidoses. General and localized obesity. Cachexia. Kwashiorkor. Morphology of calcinosis. Stone formation. Rickets.	LW
	1.3 Disorders of pigment metabolism. Exogenous and endogenous pigments. Morphology of excessive accumulation of hemoglobinogenic, proteinogenic, and lipidogenic pigments in tissues. Morphology of melanin deficiency syndrome.	LW
	1.4 Irreversible cell injury. Morphology of physiological and pathological apoptosis. Necrosis: causes, mechanisms, and clinicopathologic forms. Favorable and unfavorable outcomes of necrosis. Types of infarction. Stages of myocardial infarction.	LW
Module 2 Pathology of blood and lymph circulation disorders.	2.1 Circulatory disorders. Active and passive hyperemia. Morphology of systemic venous congestion. Hemorrhages. Shock: etiology and classification of shock.	LW
	2.2 Thrombosis. Embolism. Morphology and types of thrombi. Hemostasis pathology: disseminated intravascular coagulation and thromboembolic syndrome. Outcomes of thrombosis. Types of embolism.	LW
Module 3 General pathology of	3.1 Inflammation.	LW

Course module title	Course module contents (topics)	Academic activities types
inflammation.	Clinical and anatomical forms of exudative inflammation. Forms of purulent inflammation. Outcomes of acute inflammation. Types of productive inflammation. Specific inflammation.	
Module 4 Pathology of compensatory-adaptive processes.	4.1 Compensatory-adaptive processes. Atrophy. Hypertrophy. Hyperplasia. Regeneration. Metaplasia. Regeneration of specific tissue types. Wound healing: types, stages, and outcomes.	LW
Module 5 Methods of diagnosis in pathological anatomy.	5.1 Histological method Specific features of the use of various staining methods: hematoxylin and eosin, Romanowsky–Giemsa, orcein, Congo red, Sudan III, toluidine blue.	LW
	5.2 Immunohistochemical method Principle of the method. Main markers used in immunohistochemistry: proliferation marker Ki-67, apoptosis marker p53.	LW
	5.3 Digital Pathology (AI). Use of AI in digital pathology for scanning, analysis, and review of histological specimens.	LW
Module 6 Pathology of tumors.	6.1 Introduction to oncopathology. Tumors of epithelial origin. Theories of carcinogenesis. Principles of tumor classification. Metastasis: cascade theory and pathways. Features of benign and malignant tumors. Secondary changes in tumors. Paraneoplastic syndromes. Locally destructive tumors. Classification of epithelial tumors.	LW
	6.2 Specific forms of cancer. Lung cancer. Gastric cancer. Breast cancer. Uterine cancer, including cervical and endometrial cancer. Ovarian cancer. Choriocarcinoma.	LW
	6.3 Tumors of mesenchymal and mesodermal origin. Clinicopathologic features of sarcomas. Classification of mesenchymal tumors. Vascular malformations and tumors. Classification of central nervous system tumors. Melanocytic tumors. Teratomas.	LW
Module 7	7.1	LW

Course module title	Course module contents (topics)	Academic activities types
Pathology of blood cells and bone marrow.	<p>Hemoblastoses. Clinicopathologic features of acute and chronic leukemias. Causes of death in leukemia. Multiple myeloma. Lymphomas. Features of the morphological diagnosis of lymphogranulomatosis, Burkitt lymphoma, and mycosis fungoides.</p> <p>7.2 Anemia. Classification of anemias by etiology and color index. Morphological features of pernicious anemia, iron-deficiency anemia, and posthemorrhagic anemia.</p>	LW
<p>Module 8 Pathology of diseases of the cardiovascular system.</p>	<p>8.1 Atherosclerosis. Macroscopic and microscopic manifestations of atherosclerosis. Clinicopathologic forms of atherosclerosis.</p> <p>8.2. Ischemic heart disease. Acute ischemic heart disease. Classification, stages, and complications of myocardial infarction. Chronic ischemic heart disease.</p> <p>8.3 Hypertensive disease. Classification. Changes in target organs and causes of death in benign and malignant hypertension. Stroke.</p> <p>8.4 Rheumatic diseases. Heart defects. Morphological changes in connective tissue characteristic of collagen diseases. Acute rheumatic fever. Rheumatoid arthritis. Polyarteritis nodosa. Systemic lupus erythematosus. Acquired heart defects, including stenosis and insufficiency. Congenital heart defects. Tetralogy of Fallot.</p>	LW
<p>Module 9 Pathology of diseases of the urinary system.</p>	<p>9.1 Kidney diseases. Classification of kidney diseases. Glomerulopathies. Tubulopathies. Interstitial nephritis. Morphology of acute and chronic kidney failure. Principal causes of death in kidney diseases.</p>	LW
<p>Module 10 Pathology of diseases of the digestive system.</p>	<p>10.1 Liver diseases. Acute and chronic hepatitis. Clinico-anatomical forms of viral hepatitis. Cirrhosis: classification, morphology, and</p>	LW

Course module title	Course module contents (topics)	Academic activities types
	<p>syndromes. Causes of death in liver cirrhosis.</p> <p>10.2 Gallbladder diseases. Acute and chronic cholecystitis. Cholangitis.</p> <p>10.3 Stomach diseases. Acute and chronic gastritis. International classification of chronic gastritis. Peptic ulcer disease of the stomach and duodenum.</p> <p>10.4 Intestinal diseases. Ulcerative colitis. Appendicitis. Crohn's disease.</p>	<p></p> <p>LW</p> <p>LW</p> <p>LW</p>
<p>Module 11 Pathology of infectious diseases of bacterial and mycotic origin.</p>	<p>11.1 Introduction to infections. Typhus. Clinico-morphological characteristics of infectious diseases. Typhoid fever. Epidemic typhus.</p> <p>11.2 Diphtheria. Scarlet fever. Bacillary dysentery. Diphtheria: lesions of the pharynx and larynx, true croup, complications. Scarlet fever: morphological features and complications in different stages, complications. Bacillary dysentery: morphological changes, complications.</p> <p>11.3 Bronchitis. Pneumonia. Morphology of acute and chronic bronchitis. Complications of bronchitis that are included in bronchial obstruction syndrome. Causes of death in chronic bronchitis. Lobar pneumonia: stages and complications. Bronchopneumonia. Interstitial pneumonia.</p> <p>11.4 Tuberculosis. Primary tuberculosis: the primary tuberculous complex and its outcomes. Secondary tuberculosis. Forms of secondary tuberculosis.</p> <p>11.5 Syphilis. Morphological manifestations of primary, secondary, and tertiary syphilis. Neurosyphilis. Congenital syphilis.</p> <p>11.6</p>	<p>LW</p> <p>LW</p> <p>LW</p> <p>LW</p> <p>LW</p> <p>LW</p>

Course module title	Course module contents (topics)	Academic activities types
	Leprosy. Clinicopathologic features of the lepromatous and tuberculoid forms of leprosy. 11.7 Mycoses. Mycetoma. Common forms of fungal infections of the lungs. Blastomycosis. Aspergillosis.	LW
Module 12 Pathology of infectious diseases of viral origin.	12.1 Influenza. Major complications of influenza. “Shock lung” / acute respiratory distress syndrome. 12.2 Measles. Clinicopathologic features and complications of measles.	LW
Module 13 Pathology of parasitic diseases.	13.1 Parasitic diseases. Clinicopathologic characteristics of malaria, amebiasis, schistosomiasis, leishmaniasis, trypanosomiasis, and echinococcosis.	LW
Module 14 Pathology of quarantine infections and sepsis.	14.1 Quarantine infections. Clinicopathologic characteristics of plague, smallpox, cholera, and anthrax. 14.2 Sepsis. Systemic inflammatory response syndrome. Variants of definition. Distinguishing sepsis from other infectious diseases.	LW

* - to be filled in only for **full**-time training: *LC* - lectures; *LW* - lab work; *S* - seminars.

6. CLASSROOM EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

Table 6.1. Classroom equipment and technology support requirements

Classroom for Academic Activity Type	Classroom equipment	Specialized educational/laboratory equipment, software and materials for the development of the course. (if necessary)
Lab-work	Classroom for laboratory classes, individual consultations, current assessment, and interim assessment, equipped with a set of specialized furniture and equipment.	Museum collection of macro specimens covering various types of human pathology; set of histological slides covering various types of pathology; binocular microscopes for the study of histological slides; charts on various types of pathology.
Seminar	Classroom for seminar classes, group and individual consultations, current assessment, and interim assessment, equipped with a set of specialized furniture and multimedia presentation equipment.	Dell OptiPlex 3080 Micro mini-PC, LG 40UK6200 television set; software: Microsoft products (operating system and office suite, including Office 365).
Self-studies	Classroom for students' independent work, which may also be used for seminar classes and consultations, equipped with a set of specialized furniture and computers with access to the electronic information and educational environment.	

*-a room for students' independent study must be specified as a **MANDATORY REQUIREMENT!**

7. RECOMMENDED SOURCES FOR COURSE STUDIES

Main readings:

1. Babichenko I.I., Ivina A.A., Familia Frias D.R. Guid for Laboratory Classes in Pathological Anatomy. Moscow: RUDN Publishing House, 2024. – 261 p.
2. Babichenko I.I., Ivina A.A., Familia Frias D.R. Brief Review of Pathological Processes. Specialty “General Medicine”. Moscow: RUDN Publishing House, 2024. – 57 p.
3. Kumar, Vinay, et al. Robbins & Kumar Basic Pathology. 11th ed., illustrated, Elsevier, 2022, 840 p.- ISBN 978-0-323-79018-5
4. Mohan, Harsh. Practical Pathology. India, Jaypee Brothers Medical Publishers, 2021, 294 p.

5. Nayak, Ramadas., Nayak, Rakshatha. Exam Preparatory Manual for Undergraduates: Pathology. India: Jaypee Brothers Medical Publishers Pvt. Limited, 2020, 942p. ISBN 978-9-389-77640-9
6. Pathological anatomy [Electronic resource]: Textbook / A.I. Strukov, V.V. Serov; Edited by V. S. Paukov. - 6th ed., reprint. and additional - M.: GEOTAR-Media, 2023. - 880 p.: ill. <https://www.studentlibrary.ru/book/ISBN9785970461396.html>

Additional readings:

Electronic full-text materials:

1. Pathologic anatomy [Electronic resource]: Textbook / A. I. Strukov, V. V. Serov; Ed. V. S. Paukova 6th ed., revised. and additional - M.: GEOTAR-Media, 2015. - 880 p.: ill. (in Russian).
http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=456496&idb=0

Printed publications:

1. Ivina A. A., Kudryavtseva L. V., Kudryavtsev G. Yu. Specific forms of cancer: lung cancer, gastric cancer, uterine cancer, ovarian cancer, breast cancer [Electronic resource]: Training manual for practical training in pathological anatomy. Moscow: RUDN Publishing House, 2019. – 40p.
2. Ivina A. A., Kudryavtseva L. V., Kudryavtsev G. Yu. Parasitic diseases: malaria, amoebiasis, schistosomiasis, leishmaniasis, trypanosomiasis, echinococcosis.: RUDN Publishing House, 2019. – 28 p. – ISBN 978-5-209-08941-4.
3. Mohan, Harsh. Textbook of Pathology. India, Jaypee Brothers Medical Publishers Pvt. Limited, 2018, 1028p. – ISBN 978-9-352-70547-4.
4. Pathological anatomy [Electronic resource]: Textbook / A. I. Strukov, V. V. Serov; Ed. V. S.Paukova, 6th ed., reprint. : Moscow: GEOTAR-Media, 2015, 880 p. (in Russian).
5. http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=456496&idb=0
6. Babichenko I.I., Ivina A.A., Kharchenko N.M. Brief description of the main pathological processes. Specialty "Medicine". - M.: Publishing House of RUDN University, 2014. - 47 p.
7. Babichenko I.I., Ivina A.A. Dictionary of basic pathoanatomical terms. Specialty "Medicine". - M.: Publishing House of RUDN University, 2014. - 48 p.
8. Gribunov Yu.P., Rogov K.A., Shestakova I.N., Ivina A.A. Basic principles of registration of the final clinical and pathoanatomical diagnoses. - M. : Publishing house of RUDN University, 2015.- 19 p.
9. Vladimirtseva A.L. parasitic diseases. Educational and methodical manual for a practical lesson in pathological anatomy. - M.: RUDN, 2009. - 31 p.
10. Gribunov Yu.P., Shestakova I.N., Babichenko I.I. immunopathological processes. Educational and methodical manual for a practical lesson in pathological anatomy. - M.: RUDN, 2009. - 23 p.

Internet-(based) sources:

1. Electronic libraries with access for RUDN students

1. -RUDN University Electronic Library System-RUDN [University Electronic Library System http://lib.rudn.ru/MegaPro/Web](http://lib.rudn.ru/MegaPro/Web)
 - EBS "University Library online" <http://www.biblioclub.ru>
 - EBS Urite <http://www.biblio-online.ru>

- EBS "Student's consultant" www.studentlibrary.ru
- EBS "Lan" <http://e.lanbook.com/>
- EBS "Troitsky Bridge"
- Full collection of Cambridge University Press journals
<https://www.cambridge.org/core>
- Journals, published by Nature Publishing Group
<http://www.nature.com/siteindex/index.html>
- Oxford Journals, a complete collection of journals
<https://academic.oup.com/journals/>
- Archive of scientific journals published by SAGE Publications
<http://arch.neicon.ru/xmlui/handle/123456789/2757634/browse?type=source>
- Science online, American Association for the Advancement of Science (AAAS) <http://science.sciencemag.org/content/by/year>
- ScienceDirect (ESD), «FreedomCollection», ИД "Elsevier"
<http://www.sciencedirect.com/>
- Electronic resources of Springer publishing house <https://rd.springer.com/>
- Taylor & Francis journals <https://www.tandfonline.com/>
- Thieme <https://science-of-synthesis.thieme.com/>
- Wiley Online Library - a multidisciplinary collection of journals
<http://www.wileyonlinelibrary.com/>

2. Databases and search engines:

- Discipline page in TUIS RUDN University:
<https://esystem.rudn.ru/course/view.php?id=2079>
- U.S. National Library of Medicine National Institutes of Health:
<http://www.ncbi.nlm.nih.gov/pubmed/>
- Scientific electronic library:
<http://elibrary.ru/defaultx.asp>
- Website of the Russian Society of Pathologists
<http://patholog.ru>
- Website of the Royal College of Pathologists
<https://www.rcpath.org/>
- Pathological Anatomy Information Database
<https://www.pathologyoutlines.com/>
- Online courses archive of video lectures on pathological anatomy Medical School Pathology <https://www.medicalschoolpathology.com/>
- Online Pathological Anatomy Laboratory of the University of Utah
<https://webpath.med.utah.edu/>
- Information online resource on pathological anatomy
<http://www.pathguy.com/>
- WebPathology Slides Database
<https://www.webpathology.com/>
- Micropreparations Juan Rosai's Collection
<https://www.rosaicollection.org/>

Learning toolkits for self-studies during the development of the discipline *:

1. A course of lectures on the discipline "**Pathological Anatomy, Clinical Pathological Anatomy**".
2. Laboratory practice on the discipline "**Pathological anatomy, clinical pathological anatomy**".
3. Guidelines for the implementation and design of control and self-study in the discipline "**Pathological Anatomy, Clinical Pathological Anatomy**".

* - all educational and methodological materials for independent work of students are placed in accordance with the current procedure on the page of the discipline on **TUIS!**

8. EVALUATION TOOLKIT AND SCORE-RATING SYSTEM FOR ASSESSING THE LEVEL OF FORMATION OF COMPETENCES IN THE COURSE

Evaluation Toolkit (ET) and a score-rating system (SRS)* for assessment the level of competence formation (GPC-5, PC-2) based on the results of mastering the discipline "**Pathological Anatomy, Clinical Pathological Anatomy**" are presented in the appendix to this Working Program of the Course.

* - * - ET and SRS are formed on the basis of the requirements of the relevant local regulatory act of the RUDN University.

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Position, Basic training unit

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