

Federal State Budgetary Educational Institution of Higher Education
"Privolzhsky Research Medical University"
Ministry of Health of the Russian Federation

APPROVED

Vice-Rector for Academic Affairs

_____ E.S. Bogomolova

31 August 2021

WORKING PROGRAM

Name of the academic discipline **PATHOLOGY**

Specialty: **33.05.01 PHARMACY**

(code, name)

Qualification: **PHARMACIST**

Department: **PATHOLOGICAL PHYSIOLOGY**

Mode of study: **FULL-TIME**

Labor intensity of the academic discipline: **216 academic hours**

Nizhny Novgorod
2021

The working program has been developed in accordance with the Federal State Educational Standard for the specialty 33.05.01 PHARMACY approved by Order of the Ministry of Science and Higher Education of the Russian Federation No. 219 of June 15, 2018.

Developers of the working program:

Potemina T.E. – M.D., Professor, Head of the Department of Pathological Physiology of FSBEI HE PRMU MOH Russia

Kuznetsova S.V. – M.D., Associate Professor, Associate Professor of the Department of Pathological Physiology of FSBEI HE PRMU MOH Russia

The program was reviewed and approved at the department meeting (protocol No 8, 26.08.2021)

Head of the Department,

M.D., Professor, _____ (Potemina T.E.)
(signature)

26 August 2021

AGREED

Deputy Head of EMA ph.d. of biology _____ Lovtsova L.V.
(signature)

26 August 2021

1. The purpose and objectives of mastering the academic discipline Pathology (hereinafter – the discipline):

1.1. The purpose of mastering the discipline: participation in forming the relevant competencies UC-1; GPC-2

1.2. Requirements to the deliverables of mastering the discipline

As a result of completing the discipline, the student should

Know:

basic laws of general nosology: etiology, including consideration of the causes and conditions of pathological processes and diseases; general mechanisms of pathogenesis and sanogenesis; the essence, biological and individual values of the disease, classification and nomenclature, pathomorphism of human diseases, principles of their prevention (prophylaxis) and treatment.

Be able to:

analyze typical pathological processes, their causes and mechanisms of formation, the role of body reactivity in the development of leading manifestations in the form of symptoms and syndromes, biological significance, principles of drug correction; interpret typical forms of pathology of organs and systems, as well as the main human diseases of somatic, psychosomatic and mental nature, their etiology, pathogenesis, adaptive processes in the body, manifestations and basics of prevention, diagnosis and treatment;

analyze the scientific literature, prepare abstracts on current scientific problems and reports on the research performed.

Possess:

skills of independent measurement of the main functional characteristics of the body (pulse, blood pressure) and interpretation of the results;

skills of independent use of the physiological conceptual apparatus;

communication skills with the team.

2. Position of the academic discipline in the structure of the General Educational Program of Higher Education (GEP HE) of the organization.

2.1. The discipline Pathology refers to the core part of Block 1 of GEP HE (Academic discipline index B.1. O.19.).

The discipline is taught in 4-5 semesters/ II - III year of study.

2.2. The following knowledge, skills and abilities formed by previous academic disciplines are required for mastering the discipline:

philosophy, Latin language

maths and biophysics

biology

chemistry

physiology with a basics of anatomy

microbiology

2.3. Mastering the discipline is required for forming the following knowledge, skills and abilities for subsequent academic disciplines:

biological chemistry

pharmacology

hygiene.

3. Deliverables of mastering the academic discipline and metrics of competence acquisition

Mastering the discipline aims at acquiring the following universal (UC) or/and general professional (GPC) (or/and professional (PC)) competencies

№	Competence code	The content of the competence (or its part)	Code and name of the competence acquisition metric	As a result of mastering the discipline, the students should:		
				to know	to be able to	to possess
1.	UC-1	UC-1 Able to realize critical analysis of problem situations based on a systematic approach, develop a strategy actions	UC-1.1 Analyzes the problem situation as a system identifying its components and connections between them UC-1.2 Identifies gaps in the information needed to solve a problem situation, and designs processes for their elimination	the importance of pathology for the development of medicine and public health; connection of pathology with other medical-biological and medical disciplines	to solve professional tasks of a doctor based on pathological analysis of specific data on pathological processes, conditions, reactions and diseases	principles of evidence-based medicine based on the search for solutions using theoretical knowledge and practical skills
2.	GPC-2	GPC-1 Able to apply knowledge about morphofunctional features, physiological conditions and pathological processes in the human body to solve professional tasks	GPC-2.3. Takes into account morphofunctional features, physiological conditions and pathological processes in the human body when choosing non-prescription medicinal products and other pharmacy products	basic laws of general nosology: etiology, including causes and conditions of pathological processes and diseases; general pathogenesis and sanogenesis; the essence, biological and individual values of the disease, classification of human diseases, principles of prophylaxis and treatment	analyze typical pathological processes, their causes and mechanisms of formation, the role of body reactivity in the development of leading manifestations in the form of symptoms and syndromes, biological significance, principles of drug correction; interpret typical forms of pathology of organs and systems	skills of independent measurement of the main functional characteristics of the body (pulse, blood pressure) and interpretation of the results

4. Sections of the academic discipline and competencies that are formed when mastering them

№	Competence code	Section name of the discipline	The content of the section in teaching units
1	UC-1; GPC-2	General pathology 1	Subject and tasks of pathology. Basic concepts of nosology. Pathogenic effect of environmental factors. Modeling of pathological processes. Acute non-specific cell injury. Disorders of peripheral blood circulation and microcirculation. Acute inflammation. Chronic inflammation. Fever. Allergy. Tumor growth.
2	UC-1; GPC-2	General pathology 2	Pathology of water-salt metabolism. Edema. Pathology of the acid-base balance. Pathology of carbohydrates metabolism. Emergency states.
3	UC-1; GPC-2	Pathology of blood	Pathology of red blood cells: anemia, erythrocytosis. Pathology of white blood cells: leukocytosis, leukopenia, leukemoid reactions, leukemia. Pathology of hemostasis.
4	UC-1; GPC-2	Pathology of organs and systems	Pathology of external respiration. Hypoxia Pathology of the cardiovascular system. Heart failure. Coronary insufficiency. Cardiac arrhythmias. Hypertension.. Pathology of the gastrointestinal tract. Peptic ulcer disease. Pathology of the liver. Jaundice. Pathology of the kidneys. Pathology of the endocrine system. Pathology of the nervous system. Pain.

5. Volume of the academic discipline and types of academic work

Type of educational work	Labor intensity		Labor intensity (AH) in semesters			
	volume in credit units (CU)	volume in academic hours (AH)	4		5	
Classroom work, including		110	44		66	
Lectures (L)		34	14		20	
Laboratory practicum (LP)*						
Practicals (P)		76	30		46	
Seminars (S)						
Student's individual work (SIW)		70	26		42	
Mid-term assessment						
exam		36			36	
TOTAL LABOR INTENSITY		6	216	72		114

6. Content of the academic discipline

6.1. Sections of the discipline and types of academic work

№	Name of the section of the academic discipline	Types of academic work* (in AH)					
		L	LP	P	S	SIW	total
1	General pathology 1	14		30		28	72
2	General pathology 2	8		16		10	
3	Pathology of the blood system and hemostasis	4		10		12	
4	Pathology of organs and systems	8		20		20	108
	Exam						36
	TOTAL	34		76		70	216

* - L – lectures; LP – laboratory practicum; P – practicals; S – seminars; SIW – student’s individual work.

6.2. Thematic schedule of educational work types:

6.2.1 Thematic schedule of lectures

№	Name of lecture topics	Volume in AH	
		semester 4	semester 5
1.	Subject, sections, and methods of pathology. Basic concepts of general nosology. Subject, tasks and methods of pathology.	2	
2.	The role of body reactivity in pathology.		
3.	Pathogenic factors of the environment.	2	
4.	Cell damage.	2	
5.	Inflammation: acute, chronic. Acute phase response.	2	
6.	Extreme conditions	2	
7.	Immunopathological processes. Allergy.	2	
8.	Pathology of tissue growth. Tumors.	2	
9.	Pathology of metabolism.		2
10.	Pathology of the cardiovascular system.		2
11.	Pathology of the blood system.		2
12.	Pathology of the digestive system.		2
13.	Liver pathology. Jaundice.		2
14.	Pathology of external respiration. Hypoxia.		2
15.	Kidney pathology.		2
16.	Pathology of the endocrine system.		2
17.	Pathology of the nervous system. Pain.		2
	Total (total 34 AH)	14	20

6.2.2. The thematic plan of laboratory practicums (*if this type of classes is stipulated in the curriculum*) - **this type of classes is not stipulated in the curriculum**

6.2.3. Thematic plan of practicals

№	Name of the topics of practicals	Volume in AH	
		semester 4	semester 5
1.	Subject, sections, and methods of pathology. Basic concepts of general nosology.	5	
2.	Pathogenic factors of the environment	5	
3.	Pathology peripheral blood circulation	5	
4.	Inflammation. Acute phase response.	5	
5.	Fever. Hyper-and hypothermia.	5	
6.	Allergy.	5	
7.	Pathology of tissue growth. Tumors.		5
8.	Pathology of water metabolism and CBS. Pathology of carbohydrate metabolism.		6
9.	Extreme conditions.		5
10.	Pathology of the cardiovascular system.		5
11.	Pathology of the external respiratory system.		5
12.	Pathology of the blood system.		10
13.	Pathology of the digestive system. Liver pathology. Jaundice.		5
14.	Pathology of the endocrine system. Pathology of the nervous system. Pain.		5
	Total	30	46

6.2.4. Thematic plan of seminars (*if this type of classes is stipulated in the curriculum*)- *this type of classes is not stipulated in the curriculum*

6.2.5. Types and topics of student's individual work (SIW)

№	Types and topics of SIW	Volume in AH	
		semester 4	semester 5
1.	Work with literary sources	6	10
2.	Work with electronic resources located on the SDE-lectures-presentations, tests, situational tasks/cases	10	20
3.	Work with electronic resources located on the portal-video lectures and lectures	12	12
	TOTAL (total - AH)	28	42

7. Types of assessment formats for ongoing monitoring and mid-term assessment

№	Se-	Types of control	Name of sec-	Assessment formats
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	mester No.		tion of academic discipline	Competence codes	types	number of test questions	number of test task options
1.	4	Current monitoring	Control of mastering the topic	Etiology and pathogenesis. General nosology. Heredity. Reactivity. Resistance Constitution	UC-1; GPC-2	tests	
			Monitoring the student's individual work			tests	20
2.	4	Current monitoring	<i>Control of mastering the topic and monitoring the student's individual work</i>	Cell damage. Aging. Fasting. Influence of environmental factors	UC-1; GPC-2	tests	20 3
3.	4	Current monitoring	<i>control of mastering the topic and monitoring the student's individual work</i>	Inflammation. Acute phase response. Fever.	UC-1; GPC-2	tests, cases	20 3
4.	5	Current monitoring	<i>control of mastering the topic and monitoring the student's individual work</i>	Immunopathology. Allergies	UC-1; GPC-2	tests, cases	20 3
5.	5	Current monitoring	<i>control of mastering the topic and monitoring the student's individual work</i>	Tumor growth	UC-1; GPC-2	tests	20 3
6.	5	Current monitoring	<i>control of mastering the topic and monitoring the student's individual work</i>	Metabolic disorders – water-electrolyte, acid-base, protein, fat, carbohydrate	UC-1; GPC-2	tests, cases	20 3

7.	5	Current monitoring	<i>control of mastering the topic and monitoring the student's individual work</i>	Extreme conditions	UC-1; GPC-2	tests	20	3
8.	5	Current monitoring	<i>control of mastering the topic and monitoring the student's individual work</i>	Pathology of the blood system	UC-1; GPC-2	tests	20	3
9.	5	Current monitoring	<i>control of mastering the topic and monitoring the student's individual work</i>	Pathology of the cardiovascular system	UC-1; GPC-2	tests, cases	20	3
10.	5	Current monitoring	<i>control of mastering the topic</i>	Respiratory pathology. Hypoxia.	UC-1; GPC-2	tests	20	3
11.	5	Current monitoring	<i>control of mastering the topic and monitoring the student's individual work</i>	Pathology of the gastrointestinal tract. Liver pathology.	UC-1; GPC-2	tests	20	3
12.	5	Current monitoring	<i>control of mastering the topic and monitoring the student's individual work</i>	Kidney pathology	UC-1; GPC-2	tests, cases	20	3
13.	5	Current monitoring	<i>control of mastering the topic and monitoring the student's individual work</i>	Pathology of the nervous and endocrine system	UC-1; GPC-2	tests	20	3
14.	5	Mid-term assessment	Exam		UC-1; GPC-2	tests	50 + 50	10

8. Educational, methodological and informational support for mastering the academic discipline (printed, electronic publications, the Internet and other network resources)

8.1. Key literature references

№	Name according to bibliographic requirements	Number of copies	
		at the department	in the library
1	Robbins and Cotran pathologic basis of disease / ed. by A.K. Abbas, J.C. Aster, V. Kumar; Kumar. - 9th ed. - Philadelphia : Elsevier Saunders, 2015. - 1391 p	40	
2	Pocket companion to Robbins and Cotran pathologic basis of disease/ R.N. Mitchael, V. Kumar, A.K. Abbas, J.C. Aster. - 9th ed. - Philadelphia : Elsevier, 2018. - 823 p.	70	
3	Underwood's pathology: a clinical approach by Simon S. Cross. 7th edition. Edition: Elsevier. 2018.- 776 p.	5	

8.2. Further reading

№	Name according to bibliographic requirements	Number of copies	
		at the department	in the library
1	Clinical Pathophysiology. Concise lectures, tests, cases Litvitsky P.F., Pirozhkov S.V., Tezikov E.B. Moscow PUBLISHING GROUP: GEOTAR-Media, 2018. - 432 p.	2	
2	Color Atlas of Pathophysiology by Stefan Silbernagl, Florian Lang Publisher: Thieme (24 February 2016). - 448 p.	2	

8.3. Electronic educational resources for teaching academic subjects

8.3.1. Internal Electronic Library System of the University (IELSU)

№	<i>Name of the electronic resource</i>	<i>Brief description (content)</i>	<i>Access conditions</i>	<i>Number of users</i>
	The PRMU Digital Library	The PRMU Digital Library is a centralized repository of full-text documents: educational documents (textbooks, study guides, collections of tasks, training courses, lecture texts, teaching aids, laboratory works, practical tasks); scientific documents (monographs, collections of scientific papers, conference collections, abstracts of theses, theses); periodical and ongoing publications; reference publications. The main content includes the works of PRMU employees. There is an English interface.	Access to digital library is open for PRMU employees and students from any computer on the Internet, using an individual login and password	Not limited

8.3.2. Electronic educational resources acquired by the University

№	Name of the electronic resource	Brief description (content)	Access conditions	Number of users
1	A digital library «Student's Consultant» http://www.studmedlib.ru/	Educational materials (books, audio, video, interactive materials, test tasks) for high medical and pharmaceutical education.	Access to databases is open for PRMU employees and students from any computer on the Internet, using an individual login and password	Not limited General Subscription of PRMU
2	A digital library «BookUp» http://www.books-up.ru/	Educational and scientific medical literature of Russian publishing houses, incl. translations of foreign publications.	Access to databases is open for PRMU employees and students from any computer on the Internet, using an individual login and password, from the computers of the academy. Subscribed editions are available for reading.	Not limited General Subscription of PRMU
3	Cochrane library https://www.cochranelibrary.com/	Cochrane Database of Systematic Reviews contains systematic reviews to answer a specific research question. Cochrane Central Register of Controlled Trials (CENTRAL) is a bibliographic source of randomized and quasi-randomized controlled trials. In addition to bibliographic information (author, source, year, etc.), CENTRAL records often include an abstract of the article. Cochrane Clinical Answers contains clinical questions, short answers and data on the results of the Cochrane Review, which are considered the most relevant for practicing medical professionals. The proofs are displayed in a user-friendly tabular format that includes descriptions, data, and links to graphs.	Access to databases The Cochrane Library is open for PRMU employees and students until 31.12.2022:	

8.3.3 Open access resources

№	Name of the electronic resource	Brief description (content)	Access conditions
1	MedCram - Medical Lectures Explained CLEARLY https://www.youtube.com/user/MEDCRAMvideos/featured	Dr. Scheult is quadruple board certified (internal medicine, pulmonary, critical care, and sleep medicine) and an associate professor of medicine. He is the co-founder of https://www.medcram.com . MedCram is trusted by thousands of clinicians, students, and universities with over 50 million video views and counting. Easy to follow, digestible medical videos will help you understand more in less time. Short quizzes and case studies reinforce key concepts. In addition to our over 100 free MedCram medical videos, we've also created fast-paced and high yield comprehensive medical courses on a variety of topics. MedCram videos are efficient - highlighting the key points without bogging down with too much information all at once.	
2	Harvard Medical School https://www.youtube.com/c/harvardmedicalschoo/featured	Visiting the channel regularly enables to find fresh scientific discoveries, trends in biomedical research and education, profiles of thought leaders, conversations on health policy, and more.	
3	Lecturio Medical https://www.youtube.com/channel/UCbYmF43dpGHZ8gi2ugiXr0Q	Broaden medical knowledge with Lecturio's video lectures, integrated recall quizzes, enhanced medical concept library, and subject/NBME® exams! Lecturio Medical is all-in-one medical school study companion! Lecturio Medical is an excellent supplement for classes and clerkships, as well as for preparation for USMLE® Step 1 & 2 CK, COMLEX Level 1 & 2, and NBME® exams, MCAT, MBBS, NEET-PG, and more with video lectures integrated into a powerful question bank for active learning.	
4	iMedicalSchool https://www.youtube.com/c/iMedicalSchool/about	iMedicalSchool is dedicated to explaining complicated medical subjects to medical students, nurses, physician assistants, medical assistants, physicians, and patients.	
5	One Minute Medical School https://www.youtube.com/c/OneMinuteMedSchool/featured	Medical topics are broken down so the key point is presented understandably in sixty seconds by Dr. Rob Tarzwell, a Clinical Assistant Professor on the Faculty of Medicine at the University of British Columbia.	
6	Armando Hasudungan https://www.youtube.com/user/armandohasudungan/about	Armando Hasudungan is a physician trainee living in Sydney Australia. He makes these videos because he loves to create medical diagrams. They help us learn.	

7	Handwritten Tutorials https://www.youtube.com/user/harpinmartin/about	Handwritten Tutorials is a source of entirely FREE easy-to-understand medical tutorials.	

9. Material and technical support for mastering an academic discipline

9.1. List of premises for classroom activities for the discipline

1. A lecture hall
2. Rooms for conducting practical classes 201-204, 212, 214, 219

9.2. List of equipment for classroom activities for the discipline

electrocardiographs, multimedia complex (laptop, projector, screen), TV, video camera, video recorder, PC, DVD players, monitors, multimediae visual materials on various topics of the discipline.

9.3. A set of licensed and freely distributed software, including domestic production

Item no.	Software	number of licenses	Type of software	Manufacturer	Number in the unified register of Russian software	Contract No. and date
1	Wtware	100	Thin Client Operating System	Kovalev Andrey Alexandrovich	1960	2471/05-18 from 28.05.2018
2	MyOffice is Standard. A corporate user license for educational organizations, with no expiration date, with the right to receive updates for 1 year.	220	Office Application	LLC "NEW CLOUD TECHNOLOGIES"	283	without limitation, with the right to receive updates for 1 year.
3	LibreOffice		Office Application	The Document Foundation	Freely distributed software	
4	Windows 10 Education	700	Operating systems	Microsoft	Azure Dev Tools for Teaching Subscription	
5	Yandex. Browser		Browser	«Yandex»	3722	
6	Subscription to MS Office Pro for 170 PCs for FGBOU VO "PIMU" of the Ministry of Health of Russia	170	Office Application	Microsoft		23618/HN100 30 LLC "Soft-line Trade" from 04.12.2020

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10. List of changes to the working program (to be filled out by the template)

Federal State Budgetary Educational Institution of Higher Education
 "Privolzhsky Research Medical University"
 Ministry of Health of the Russian Federation
 (FSBEI HE "PRMU" of the Ministry of Health of Russia)

Department of
Pathological physiology

CHANGE REGISTRATION SHEET

working program for the academic discipline
PATHOLOGY

Field of study / specialty / scientific specialty: 33.05.01 PHARMACY (code, name)

Training profile: PHARMACIST
 (name) - for master's degree programs

Mode of study: full-time
 full-time/mixed attendance mode/extramural

Position	Number and name of the program section	Contents of the changes made	Effective date of the changes	Contributor's signature
1				

Approved at the department meeting
 Protocol No. _____ of _____ 20__

Head of the Department
of Pathological physiology, professor / T.E. Potemina
 department name, academic title signature print name