

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



WORKING PROGRAM

Name of the academic discipline **PATHOLOGICAL PHYSIOLOGY, CLINICAL
PATHOPHYSIOLOGY**

Specialty: **31.05.01 GENERAL MEDICINE**
(code, name)

Qualification: **GENERAL PRACTITIONER**

Department: **PATHOLOGICAL PHYSIOLOGY**

Mode of study: **FULL-TIME**

Labor intensity of the academic discipline: **252 academic hours**

Nizhny Novgorod
2021

The working program has been developed in accordance with the Federal State Educational Standard for the specialty 31.05.01 GENERAL MEDICINE approved by Order of the Ministry of Science and Higher Education of the Russian Federation No. 988 of August 12, 2020.

Developers of the working program:

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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)

26.08.2021

AGREED

Deputy Head of EMA ph.d. of biology



Lovtsova L.V.

(signature)

26.08.2021

1. The purpose and objectives of mastering the academic discipline Pathological physiology, clinical pathophysiology (hereinafter – the discipline):

1.1. The purpose of mastering the discipline: participation in forming the relevant competencies UC 1, GPC 1, GPC 5, PC 1, PC 2, PC 6.

1.2. Requirements to the deliverables of mastering the discipline

As a result of completing the discipline, the student should

Know:

concepts of etiology, pathogenesis, morphogenesis, principles of disease classification; basic concepts of general nosology; functional systems of the human body, their regulation and self-regulation when exposed to the external environment in normal and pathological processes; basic etiopathogenetic features of disease development; laws of genetics, its significance for medicine; patterns of heredity and variability in individual development as a basis for understanding the pathogenesis and etiology of hereditary and multifactorial diseases.

Be able to:

interpret the results of the most common methods of laboratory and functional diagnostics to identify pathological processes in the organs and systems of patients; substantiate the nature of the pathological process and its clinical manifestations, the principles of pathogenetic therapy of the most common disease; conduct pathophysiological analysis of symptoms and syndromes of diseases; use educational, scientific, popular science literature, and the Internet for professional activities.

Possess:

medical and functional conceptual apparatus, skills in formulating a conclusion about the presence of a pathological process based on the analysis of the results of laboratory and instrumental examination, skills in solving individual research and scientific-applied problems in the field of public health to study the etiology and pathogenesis of diseases.

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 Pathological physiology, clinical pathophysiology refers to the core part of Block 1 of GEP HE (Academic discipline index B.1. O.22.).

The discipline is taught in 5-6 semesters/ III year of study.

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

philosophy, bioethics; psychology, pedagogy; Latin language;

physics and mathematics;

biology;

biochemistry;

human anatomy,

histology, embryology, and cytology.

normal physiology;

microbiology, virology;

pathological anatomy;

hygiene.

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

therapy

surgery

infectious diseases

neurology

obstetrics and gynecology

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 carry out critical analysis of problem situations based on a systematic approach, develop an action strategy	1.1 Knows: methods of critical analysis and evaluation of modern scientific achievements; basic principles of critical analysis 1.2 Able to: gain new knowledge based on analysis, synthesis, etc.; collect data on complex scientific problems related to the professional field; search for information and solutions based on actions, experiment and experience	the importance of pathophysiology for the development of medicine and public health; connection of pathophysiology with other medical- biological and medical disciplines	to solve professional tasks of a doctor based on pathophysiological 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-1.	GPC-1. Able to implement moral and legal norms, ethical and deontological principles in professional activities	1.1 Knows: basics of medical ethics and deontology; fundamentals of legislation in the field of healthcare; legal aspects of medical practice	fundamentals of medical ethics and deontology based on knowledge of the etiopathogenesis of diseases	solve professional tasks of a doctor based on pathophysiological analysis using ethical and deontological principles	fundamentals of medical ethics and deontology based on knowledge of the etiopathogenesis of diseases
3.	GPC-5.	GPC-5. Able to assess morphofunctional physiological conditions and pathological processes in the human body to solve professional problems	5.1 Knows: anatomy, histology, embryology, topographic anatomy, physiology, pathological anatomy and physiology of human organs and systems	features of general pathophysiology, pathological physiology of human organs and systems	evaluate the main morphofunctional data, physiological states and conditions of the human body.	skills in analyzing basic morphofunctional data in various pathological processes in the body

					pathological processes in the human body	
4.	UC-2.	UC-2. Able to manage the project at all stages of its life cycle	2.1 Knows: methods for presenting and describing the results of project activities; methods, criteria and parameters for evaluating the results of project implementation; principles, methods and requirements for the project work	etiology, pathogenesis and clinical picture, features of the course complications and outcomes of diseases of internal organs; clinical signs of sudden cessation of blood circulation and / or respiration	identify clinical signs of conditions that require emergency medical care; identify conditions that require emergency medical care, including clinical signs of sudden cessation of blood circulation and respiration determine the list of laboratory and instrumental research methods for evaluation patient's condition, basic medical indications for conducting research and interpretation	assessment skills to determine clinical signs of sudden cessation of blood circulation and / or breathing
5.	UC-6.	IIK-6 Able to refer the patient for laboratory and instrumental examination	6.1 Knows: the importance of planning long-term goals of activity taking into account conditions, means, personal opportunities, stages of career growth, time perspective of development of activity and requirements of the labor market; technology and methodology of self-	basic methods and results of laboratory and instrumental studies in order to recognize the condition or establish the fact of the presence or	conduct a pathophysiological analysis of clinical, laboratory, experimental, and other data and formulate a conclusion based on them about	skills in pathophysiological analysis of examination results, laboratory, instrumental and other studies

			assessment; basic principles of self-education	absence of a disorder	the most likely causes and mechanisms of the development of pathological processes	
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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, GPK 1,5 PK 2,6	General pathophysiology.	<p>Subject and tasks of pathophysiology. Basic concepts of nosology. Pathogenic effect of environmental factors.</p> <p>Modeling of pathological processes.</p> <p>Acute non-specific cell injury.</p> <p>Disorders of peripheral blood circulation and microcirculation. Barrier functions of the body and their disorders.</p> <p>Acute inflammation. Chronic inflammation.</p> <p>Pathophysiology of temperature homeostasis. Fever. Hyperthermia (overheating). Hypothermia (overcooling).</p> <p>Pathophysiology of water-salt metabolism. Edema.</p> <p>Pathophysiology of the acid-base balance.</p> <p>Tumor growth.</p> <p>Hypoxia.</p> <p>Pathophysiology of metabolism.</p>
2	UC 1, GPK 1,5 PK 2,6	Pathophysiology of organs and systems	<p>Pathophysiology of red blood cells. Pathophysiology of white blood cells. Leukemia.</p> <p>Pathophysiology of hemostasis.</p> <p>Pathophysiology of external respiration.</p> <p>Pathophysiology of the cardiovascular system. Heart failure. Ischemic heart disease. Cardiac arrhythmias. Vascular tone pathophysiology: arterial hypertension and hypotension.</p> <p>Pathophysiology of the gastrointestinal tract. Peptic ulcer disease.</p> <p>Pathophysiology of the liver. Jaundice.</p> <p>Pathophysiology of the kidneys.</p> <p>Pathophysiology of the endocrine system.</p> <p>Pathophysiology of the nervous system. Pathology of the central nervous system and higher nervous activity. Pathology of the autonomic nervous system. Violation of trophic function of the nervous system. Pain.</p>

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)	5		6	
Classroom work, including	3,6	128	84		44	
Lectures (L)		26	18		8	
Laboratory practicum (LP)*						
Practicals (P)		102	66		36	
Seminars (S)						
Student's individual work (SIW)	2,4	88	60		28	
Mid-term assessment						
exam	1	36			36	
TOTAL LABOR INTENSITY	7	252	144		108	

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)					total
		L	LP	P	S	SIW	
	General pathophysiology	14		66		60	140
	Pathophysiology of organs and systems	12		36		28	76
	Exam						36
	TOTAL	26		102		88	252

* - 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 5	semester 6
1.	Introduction. Subject, sections and methods of pathophysiology. Basic concepts of general nosology. Etiology. Pathogenesis.	2	
2.	Cell injury.	2	
3.	Pathophysiology of inflammation.	2	
4.	Reactivity and resistance of the body. Their significance in pathology. Heredity, variability and pathology	2	
5.	Typical disorders of the body's immunogenic reactivity. Immunopathological conditions (allergies, conditions and diseases of immune autoaggression – autoimmune diseases, immunodeficiency states, pathological tolerance).	2	
6.	Typical disorders of tissue growth. Tumors.	2	
7.	Pathophysiology of extreme and terminal conditions.	2	
8.	Hypoxia.	2	
9.	Typical forms of disorders in the system of hemostasis.	2	
10.	Typical forms of pathology of the cardiovascular system.		2
11.	Typical forms of digestive disorders in the stomach and in-		2

	testines. Peptic ulcer disease. Liver failure. Jaundice.		
12	Typical forms of endocrine system pathology. Stress and its significance in pathology.		2
13	Typical forms of pathology of the nervous system and higher nervous activity.		2
	TOTAL (total - AH)	18	8

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 5	semester 6
1.	Introduction. Subject, sections and methods of pathophysiology. Basic concepts of general nosology	5	
2.	Pathogenic effect of external and internal environmental factors. Reactivity. Resistance	5	
3.	Typical-disorders of organ-tissue blood circulation and microcirculation.	10	
4.	Pathophysiology of inflammation.	10	
5.	Pathophysiology of the acute phase response. Fever. Hyperthermia and hypothermia.	5	
6.	Typical disorders of the body's immunogenic reactivity. Immunopathological conditions (allergies, conditions and diseases of immune autoaggression, immunodeficiency states, pathological tolerance).	5	
7.	Typical disorders of tissue growth. Tumors.	5	
8.	Disorders of water-electrolyte metabolism and acid-base balance	6	
9.	Pathophysiology of carbohydrate metabolism	5	
10.	Pathophysiology of extreme and terminal conditions.	5	
11.	Pathology of hemostasis	5	
12.	Typical forms of pathology of the circulatory system.		5
13.	Typical forms of blood system pathology.		11
14.	Typical forms of pathology of gas exchange function of the lungs.		5
15.	Typical forms of digestive disorders in the stomach and intestines. Peptic ulcer disease. Liver failure. Jaundice		5
16.	Typical forms of kidney pathology.		5
17.	Typical forms of endocrine system pathology. Pathology of the nervous system		5
	TOTAL (total - AH)		
		66	36

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 5	semester 6
	Work with literary sources	10	5
	Work with electronic resources located on the SDE-lectures-presentations, tests, situational tasks/cases	30	8
	Work with electronic resources located on the portal-video lectures and lectures	20	15
	TOTAL (total - AH)	60	28

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

№	Se- mester No.	Types of control		Name of section of academic discipline	Competence codes	Assessment formats		
						types	number of test questions	number of test task options
1.	5	Current monitoring	Control of mastering the topic	General nosology. Cell damage.	UC 1, GPK 1,5 PK 2,6	tests		
			Monitoring the student's individual work			tests	20	3
2.	5	Current monitoring	<i>Control of mastering the topic and monitoring the student's individual work</i>	Typical-disorders of organ-tissue blood circulation and microcirculation.	UC 1, GPK 1,5 PK 2,6	tests	20	3
3.	5	Current monitoring	<i>control of mastering the topic and monitoring the student's individual work</i>	Pathophysiology of inflammation .	UC 1, GPK 1,5 PK 2,6	tests, cases	20	3
4.	5	Current monitoring	<i>control of mastering the topic and monitoring the student's individual work</i>	Pathophysiology of the acute phase response. Fever. Hyper-and hypothermia.	UC 1, GPK 1,5 PK 2,6	tests, cases	20	3
5.	5	Current monitoring	<i>control of mastering the topic and monitoring the student's individual</i>	Reactivity and resistance of the body. Their signifi-	UC 1, GPK 1,5 PK 2,6	tests	20	3

			<i>work</i>	cance in pathology. Heredity, variability and pathology				
6.	5	Current monitoring	<i>control of mastering the topic and monitoring the student's individual work</i>	Typical disorders of the body's immunogenic reactivity. Immunopathological conditions (allergies, conditions and diseases of immune autoaggression, immunodeficiency states, pathological tolerance).	UC 1, GPK 1,5 PK 2,6	tests, cases	20	3
7.	5	Current monitoring	<i>control of mastering the topic and monitoring the student's individual work</i>	Typical disorders of tissue growth. Tumors.	UC 1, GPK 1,5 PK 2,6	tests	20	3
8.	5	Current monitoring	<i>control of mastering the topic and monitoring the student's individual work</i>	Typical forms of metabolic disorders.	UC 1, GPK 1,5 PK 2,6	tests	20	3
9.	6	Current monitoring	<i>control of mastering the topic and monitoring the student's individual work</i>	Pathophysiology of hypoxia and hyperoxia	UC 1, GPK 1,5 PK 2,6	tests, cases	20	3
10.	6	Current monitoring	<i>control of mastering the topic</i>	Typical forms of pathology of the circulatory system.	UC 1, GPK 1,5 PK 2,6	tests	20	3
11.	6	Current monitoring	<i>control of mastering the topic and monitoring</i>	Typical forms of disorders in the hemostatic	UC 1, GPK 1,5 PK 2,6	tests	20	3

			<i>the student's individual work</i>	system.				
12.	6	Current monitoring	<i>control of mastering the topic and monitoring the student's individual work</i>	Typical forms of pathology of the blood system.	UC 1, GPK 1,5 PK 2,6	tests, cases	20	3
13.	6	Current monitoring	<i>control of mastering the topic and monitoring the student's individual work</i>	Typical forms of pathology of gas exchange function of the lungs.	UC 1, GPK 1,5 PK 2,6	tests	20	3
14.	6	Current monitoring	<i>control of mastering the topic and monitoring the student's individual work</i>	Typical forms of digestive disorders in the stomach and intestines. Peptic ulcer disease.	UC 1, GPK 1,5 PK 2,6	tests	20	3
15.	6	Current monitoring	<i>control of mastering the topic and monitoring the student's individual work</i>	Liver failure. Jaundice	UC 1, GPK 1,5 PK 2,6	tests	20	3
16.	6	Current monitoring	<i>control of mastering the topic and monitoring the student's individual work</i>	Typical forms of kidney pathology.	UC 1, GPK 1,5 PK 2,6	tests	20	3
17.	5	Current monitoring	<i>control of mastering the topic and monitoring the student's individual work</i>	Pathophysiology of extreme and terminal conditions.	UC 1, GPK 1,5 PK 2,6	tests	20	3
18.	6	Current monitoring	<i>control of mastering the topic and monitoring the student's individual work</i>	Typical forms of endocrine system pathology. Stress and its significance in	UC 1, GPK 1,5 PK 2,6	tests, cases	20	3

				pathology.				
19.	6	Current monitoring	<i>control of mastering the topic and monitoring the student's individual work</i>	Typical forms of pathology of the nervous system and higher nervous activity.	UC 1, GPK 1,5 PK 2,6	tests	20	3
20.		Mid-term assessment	Exam			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	Robbins and Cotran Pathologic Basis of Disease, International Edition, 8th Edition ISBN: 1416031219 ISBN-13(EAN): 9781416031215: Elsevier Science		
4	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., Tezиков 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	
3	Edward F. Goljan Rapid Review Pathology, ISBN: 0323087876 ISBN-13(EAN): 9780323087872: 5th Edition. Edition: Elsevier Science. 2019. - 864 p.		

8.3. Electronic educational resources for teaching academic subjects

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

<i>№</i>	<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 http://95.79.46.206/login.php	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

<i>№</i>	<i>Name of the electronic resource</i>	<i>Brief description (content)</i>	<i>Access conditions</i>	<i>Number of users</i>
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	Cochrane Database of	Access to data-	

	https://www.cochranelibrary.com/	<p>Systematic Reviews contains systematic reviews to answer a specific research question.</p> <p>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.</p> <p>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.</p>	<p>bases The Cochrane Library is open for PRMU employees and students until 31.12.2022</p>	
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8.3.3 Open access resources

№	<i>Name of the electronic resource</i>	<i>Brief description (content)</i>	<i>Access conditions</i>
1	MedCram - Medical Lectures Explained CLEARLY https://www.youtube.com/user/MEDCRAMvideos/featured	Dr. Seheult 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 (EKG/ECG, vasopressors, urinalysis, pulmonology, CBC results, cardiology, hematology, infectious disease, antibiotics, and more) for a reasonable cost. MedCram medical lectures are ideal for a variety of medical students, and professionals. 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/harvardmedicalschool/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/HN10030 LLC "Softline Trade" from 04.12.2020

