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ФИО: Кузнецов Владимир Вячеславович
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Federal State Budget Educational Institution
of Higher Education
Pacific State Medical University
of the Ministry of Health of the Russian Federation

APPROVED BY
First Vice-Rector
_____ / Trankovskaya L.V./
"9" июня 2025

DISCIPLINE WORK PROGRAM

Б1.О.17 Pathophysiology, clinical pathophysiology

(name of discipline)

Specialty	**31.05.01 General Medicine** for international students (in English) (code, name)
Degree	Specialist's degree
Profile	02 "Healthcare" (in the field of providing primary health care to the population in medical organizations: polyclinics, outpatient clinics, inpatient/outpatient facilities of the municipal health care system)
Mode of study	Full-time
Period of mastering the BEP	**6 years** (nominal length of study)
Department	Department of Human Physiology and Pathophysiology

Vladivostok, 2025

Program of the discipline **Б1.О.17 Pathophysiology, clinical pathophysiology** is based on:
1) Federal State Educational Standard of Higher Education for the specialty approved by the Order No. 988 of Ministry of Science and Higher Education of the Russian Federation dated August 12, 2020.

2) Curriculum for the 31.05.01 General Medicine for international students (in English), profile profile 02 "Healthcare" (in the field of providing primary health care to the population in medical organizations: polyclinics, outpatient clinics, inpatient/outpatient facilities of the municipal health care system), approved by the Academic Council of FSBEI HE PSMU of the Ministry of Health of Russia, Report No. 8/24-25 dated March 31, 2025.

Work program for the discipline was developed by the writing team of the Department of Human Physiology and Pathophysiology of the FSBEI HE PSMU of the Ministry of Health of Russia, under the guidance of Head of the Department of Human Physiology and Pathophysiology, Doctor of Medical Sciences, Professor Markelova ElenaVladimirovna.

Developed by:

Assistant professor	Candidate of Medical Sciences, Associate Professor	Knysh S.V.
(position held)	(academic degree, academic title)	(full name)
Assistant professor	Candidate of Medical Sciences, Associate Professor	Chagina E.A.
(position held)	(academic degree, academic title)	(full name)

1. GENERAL PROVISIONS

1.1. Purpose and Objectives of Mastering Б1.О.17 Pathophysiology, clinical pathophysiology

The purpose of mastering the discipline is developing the ability to effectively solve professional medical problems based on pathophysiological analysis of data on pathological processes, clinical syndromes and diseases using knowledge of general patterns of their occurrence, progression, and outcomes, as well as master principles (algorithms, strategies) and methods for their detection (diagnosis), treatment, prevention and rehabilitation.

Objectives of mastering the discipline:

1. Studying basic concepts and modern ideas of general nosology, social, and biological causality of diseases;
2. Learning about etiology, pathogenesis, principles of detection, treatment, and prevention of the most socially significant clinical syndromes, diseases, and pathological processes;
3. Developing the ability to conduct pathophysiological analysis of data on pathological processes, clinical syndromes, typical forms of pathology and select diseases;
4. Developing methodological and methodological skills of clinical thinking and rational action of a doctor.

2. DISCIPLINE AS PART OF THE BASIC EDUCATIONAL PROGRAM

Discipline **Б1.О.17 Pathophysiology, clinical pathophysiology** is included in the mandatory part of the basic educational program for the specialty 31.05.01 General Medicine and is part of the 5 and 6 semesters' curriculum.

3. PLANNED LEARNING OUTCOMES OF THE DISCIPLINE

3.1. Mastering the discipline **Б1.О.17 Pathophysiology, clinical pathophysiology** is aimed at the development of students' competencies. The discipline facilitates the development of students' competencies corresponding to the types of professional activity.

Name of competency category (group)	**Code and Name of competency of the graduate**	**Competency Indicators**
Universal Competencies		
Systemic and critical thinking	UC-1. Is able to analyze of problems critically using system approach and devise a plan of action	CI.UC-11- looks for and investigates problem situations that arise during professional activity CI.UC-12- selects sources of information for critical analysis of problem situations that arise during professional activity CI.UC-13- develops and substantively argues a plan of action for solving problem situations using systemic and interdisciplinary approaches
General Professional Competencies		
Etiology and pathogenesis	GPC-5. Is able to assess morphofunctional status, physiological states, and pathological processes in the human body when working to achieve objectives of professional activity	CI.GPC-51- assesses the morphofunctional state based on the acquired knowledge CI.GPC-52- distinguishes between pathological and physiological processes, identifies etiology of changes CI.GPC-53- provides diagnostic assessment of the identified changes

3.2. Types of professional activity corresponding to competencies developed over the course of mastering Б1.О.17 Pathophysiology, clinical pathophysiology:

Types of professional activity objectives

1. *-Medical*

Kinds of professional activity objectives

1. *Diagnostics*

2. Treatment

3.3. Planned learning outcomes of mastering the discipline are represented by knowledge, skills, abilities and/or experience, characterize the stages of developing competencies and ensure achievement of the planned outcomes of mastering the basic educational program. Learning outcomes of a discipline are correlated with competency indicators.

4. SCOPE AND CONTENT OF THE DISCIPLINE

4.1. Scope of the Discipline and Types of Academic Work

Type of Academic Work		**Total Hours**	**Semesters**	
			5	**6**
			hours	**hours**
1		2	3	4
Classroom hours (total), including:		**158**	**86**	**72**
Lectures (L)		50	26	24
Practical classes (C)		108	60	48
Independent work of the student (IW), including:		**94**	**58**	**36**
Preparing for classes (CP)		54	30	24
Preparing for continuous assessment (CAP)		21	15	6
Preparation for interim assessment (IAP)		6	-	6
Interim assessment		36	-	36
Type of interim assessment	pass/fail test (T)	-	-	-
	exam (E)	E	-	E
TOTAL: TOTAL credit value	hrs.	**288**	**144**	**144**
	credits	**8**	**4**	**4**

4.2. Contents of the Discipline

4.2.1. Topics of Discipline Lectures and Academic Hours per Semester

No.	**Lecture Topic**	**Hours**
1	2	3
	Semester No. 5	
1.	Introduction. General principles of nosology, etiology, pathogenesis	2
2.	Reactivity (responsiveness) and resistance of the organism. Role in pathologic processes	2
3.	Pathophysiology of disorders of peripheral circulation	2
4.	Pathophysiology of hypoxia and hyperoxia	2
5.	Pathophysiology of inflammation	2
6.	Pathophysiology of the acute phase response. Fever	2
7.	Pathophysiology of immune reactivity disorders	2
8.	Pathophysiology of hypersensitivity reactions	2
9.	Pathophysiology of water-mineral metabolism	2
10.	Pathophysiology of acid-base balance	2
11.	Pathophysiology of tumor growth. Systemic influence of a tumor on the organism	2
12.	Pathophysiology of red blood cell disorders	2
13.	Pathophysiology of white blood cell disorders	2

	Hours per semester total	26
	Semester No. 6	
1.	Pathophysiology of hemostasis disorders	2
2.	Pathophysiology of cardiovascular diseases. General aspects	2
3.	Pathophysiology of cardiovascular diseases. Specific aspects	2
4.	Pathophysiology of respiratory system disorders	2
5.	Pathophysiology of digestive system disorders	2
6.	Pathophysiology of hepatobiliary system disorders	2
7.	Pathophysiology of excretory system disorders	2
8.	Pathophysiology of endocrine diseases. General aspects	2
9.	Pathophysiology of endocrine diseases. Specific aspects	2
10.	Pathophysiology of nervous system disorders and higher nervous function	2
11.	Pathophysiology of immune diseases	2
12	Pathophysiology of extreme conditions	2
	Hours per semester total	24

4.2.2. Topics of Discipline Practical Classes and Academic Hours per Semester

No.	Practical Class Topic	Hours
1	2	3
	Semester No. 5	
1	Introduction. General principles of nosology. Etiology and pathogenesis	4
2	Reactivity (responsiveness) and resistance. Role in pathologic processes. Heredity	4
3	Pathophysiology of disorders of peripheral circulation	4
4	Pathophysiology of hypoxia and hyperoxia	4
5	Pathophysiology of inflammation	4
6	Pathophysiology of the acute phase response. Fever. Hyper- and hypothermia	4
7	Pathophysiology of immune reactivity disorders	4
8	Pathophysiology of hypersensitivity reactions	4
9	Pathophysiology of water-mineral metabolism and acid-base balance	4
10	Pathophysiology of metabolic disorders	4
11	Pathophysiology of tumor growth and disorders of tissue differentiation	4
12	Pathophysiology of the infectious process	4
13	Pathophysiology of sepsis, systemic inflammatory response syndrome (SIRS), and Multiple organ dysfunction syndrome (MODS)	4
14	Pathophysiology of red blood cell disorders	4
15	Pathophysiology of white blood cell disorders	4
	Hours per semester total	60
	Semester No. 6	
1	Pathophysiology of hemostasis disorders	4
2	Pathophysiology of cardiovascular diseases. General aspects	4
3	Pathophysiology of cardiovascular diseases. Specific aspects	4
4	Pathophysiology of respiratory system disorders	4
5	Pathophysiology of aging	4
6	Pathophysiology of digestive system disorders	4
7	Pathophysiology of hepatobiliary system disorders	4
8	Pathophysiology of excretory system disorders	4
9	Pathophysiology of endocrine diseases	4
10	Pathophysiology of nervous system disorders and higher nervous function	4

11	Pathophysiology of immune diseases	4
12	Pathophysiology of extreme conditions	4
	Hours per semester total	48

4.2.3. Independent Work of the Student

No.	Name of the Discipline Section	Type of IW	Total Hours
1	3	4	5
	Semester No. 5		
1	Module 1. General pathophysiology.	Preparing flow-charts and analytical graphs; working with supplementary reading material; working with case studies and EERs	40
2	Module 2. Special (specialty) pathophysiology.	Preparing flow-charts and analytical graphs; working with supplementary reading material	18
	Hours per semester total		58
	Semester No 6		
1	Module 2. Special (specialty) pathophysiology.	Preparing flow-charts and analytical graphs; working with supplementary reading material; writing essays	22
2	Module 3. Clinical pathophysiology.	Preparing flow-charts and analytical graphs; working with supplementary reading material; writing essays	8
3	Preparation for interim assessment	Working with supplementary reading material	6
	Hours per semester total		36

5. REQUIREMENTS FOR IMPLEMENTATION OF DISCIPLINE

5.1. Discipline Requirements for Educational Materials and Provided Information

Essential reading

No.	Name/Title, Resource Type	Author(s)/Editor	Publisher Imprint, Web Address	Number of Copies (accesses) in the Library and Information Center
1	2	3	4	5
1	Pathophysiology: concise lectures, tests, cases : tutorial guide	P. F. Litvitsky, S. V. Pirozhkov, I. A. Budnik	4th ed. - Москва : ГЭОТАР-Медиа, 2025. - 376 с. - ISBN 978-5-9704-8600-9, DOI: 10.33029/9704-8600-9-PAT-2025-1-376. - Электронная версия доступна на сайте ЭБС "Консультант студента" : [сайт]. URL: https://www.studentlibrary.ru/book/ISBN9785970486009.html (дата обращения: 03.06.2025). - Режим доступа: по подписке. - Текст: электронный	Unlimited access
2	Pathophysiology : Course of Lectures	G. V. Poryadin, J.M. Salmasi	M. : MIA, 2020. - 572 + IV p. - ЭБС «Медлиб»	Unlimited access

Supplementary reading

No.	Name/Title, Resource Type	Author(s)/Editor	Publisher Imprint, Web Address	Number of Copies (accesses) in the Library and Information Center
1	2	3	4	5
1	Pathophysiology of the immune system : учеб. пособие	Е. В. Маркелова, А. В. Костюшко, Е. П. Турмова и др.	Владивосток : Медицина ДВ, 2024. - 160 с. - ЭБС «Букап»	Unlimited access
2	Pathophysiology, clinical pathophysiology: general nosology : training manual	В. Е. Красников, Е. А. Чагина, Е. В. Маркелова, А. Ю. Шубина.	Владивосток : Медицина ДВ, 2021. - 156 с. - ЭБС «Букап»	Unlimited access

Online resources

1. Electronic library system "Student Consultant" http://studmedlib.ru/
2. Electronic library system "University Library Online"http://www.biblioclub.ru/
3. Electronic library system "Urait" https://urait.ru/
4. Electronic library system "BookUp" https://www.books-up.ru/
5. Resources owned by the Library and Information Center of FSBEI HE PSMU of the Ministry of Health of Russia https://tgmu.ru/university/bibliotechno-informacionnyj-centr/resursy-bic/sobstvennye/

Online resources and respective user guides are available on the Library and Information Center website Library and Information Center — PSMU (tgmu.ru)

5.2. Discipline Requirements for Facilities and Resources

Information on the facility and resource availability and requirements of the discipline is available on the Facility and resource availability and requirements. FSBEI HE PSMU of the Ministry of Health of Russia (tgmu.ru)" page of the official website of the university.

5.3. List of Information Technologies, Information and Reference Systems, Licensed and Free Software (Including Domestically-developed Software):

1. PolycomTelepresence M100 Desktop Conferencing Application (Videoconference system)
2. SunRav Software tTester
3. 7-PDF Split & Merge
4. ABBYYFineReader
5. Kaspersky Endpoint Security
6. INDIGO online testing system
7. Microsoft Windows 7
8. Microsoft Office Pro Plus 2013
9. 1C:University

10. GARANT system
11. MOODLE (Modular Object-Oriented Dynamic Learning Environment)

6. ASPECTS OF THE IMPLEMENTATION OF THE DISCIPLINE FOR STUDENTS WITH DISABILITIES AND SPECIAL NEEDS

6.1. Availability of Accessible Environment

For students with disabilities and special needs, if a written application is submitted, lectures and practical classes are carried out taking into account health limitations, individual capabilities and medical status (hereinafter referred to as individual characteristics) of the student. Compliance with the following general requirements is ensured: teaching aids for collective and individual use are provided, required technical assistance is provided by an assistant; buildings and premises where lectures and practical classes are taking place meet accessibility requirements, other arrangements lack of which makes it impossible or difficult to master the discipline are made.

6.2. Ensuring Compliance with General Requirements

When lectures and practical classes are carried out at the written application of the student, the following general requirements are met: lectures and practical classes for students with disabilities and special needs take place at the same location as for students who do not have disabilities, if this does not cause difficulties for students; an assistant (assistants), who provide(s) students with the necessary technical assistance taking into account individual characteristics of the student, is (are) provided; necessary teaching aids are provided, taking into account individual characteristics of the student.

6.3. Availability of the Internal Policies and Procedures of FSBEI HE PSMU of the Ministry of Health of Russia to Students with Disabilities in a Format Accessible to Them.

All internal policies and procedures of FSBEI HE PSMU of the Ministry of Health of Russia concerning the discipline are made available to students with disabilities in a format accessible to them.

6.4. Increase in the Time Limit of Interim Assessment for Students with Disabilities and Special Needs in Relation to the Established duration

Format of the interim assessment of academic performance within the scope of the discipline conducted for students with disabilities and special needs is selected taking into account individual characteristics of the students (orally, by writing on paper, by typing on a computer, as a test, etc.). The duration of the interim assessment in relation to the established duration is increased at the written application of the student with disabilities. Time limit for the student's preparation for the test is increased by at least 0.5 hours.

7. STAFFING REQUIREMENTS OF THE DISCIPLINE

Academic teaching personnel that ensure the implementation of the discipline education process meet the requirements of the Federal State Educational Standard of Higher Education for the 31.05.01 General Medicine specialty; list of the aforementioned personnel is available on the website of the educational organization.

8. TUTORIAL WORK

Type of tutorial work	Forms and approaches to tutorial work
Assistance in personal growth	Overt Problem-centric debates, workshops, Olympiads, professional events (volunteers, organizers, administrators) Participation in subject and interdisciplinary Olympiads, practical skills competitions, applied science conferences and symposia Talks and problem-centric debates on topics of ethics and deontology in interactions with different categories of participants of professional activity
	Covert – creating atmosphere and infrastructure. Developing a culture of healthy lifestyle and cultivating skills aimed at preserving and improving health. Motivating students to participate in professional, research, administrative, and other kinds of professional activity. Creating atmosphere of kindness and respect with a high level of communication during implementation of the discipline.
Civic position and values	Overt Conducting events that facilitate development of civil culture (roundtable discussions, discussions/debates, and talks).
	Covert – focusing on civic values-oriented position and legal awareness Development of mindful civic position during professional activity Cultivating socially-relevant characteristics and personal experience of community work.
Social values	Overt Highlighting aspects of organization of healthy lifestyle based on health-preserving technologies. Highlighting ecology-related questions, environmental issues as a factor affecting population health and select population risks.
	Covert Development of environmental awareness and sustainable ecological behavior.