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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.21 Clinical pharmacology

(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	of Pharmacology and Clinical Pharmacology

Vladivostok, 2025

Program of the discipline **Б1.О.21 Clinical pharmacology** 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 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 Pharmacology and Clinical Pharmacology of the FSBEI HE PSMU of the Ministry of Health of Russia, under the guidance of the head of the department, Doctor of Medical Sciences, professor Eliseeva E.V.

Developed by:

Head of the Department	Doctor of Medical Sciences, Professor	Eliseeva E.V.
(position held)	(academic degree, academic title)	(full name)
Assistant professor	Candidate of Medical Sciences	Tyrtyshnikova A.V.
(position held)	(academic degree, academic title)	(full name)
Assistant	-	Parichuk K.A.
(position held)	(academic degree, academic title)	(full name)

1. GENERAL PROVISIONS

1.1. Purpose and Objectives of Mastering Б1.О.21 Clinical pharmacology

The purpose of mastering the discipline is acquiring knowledge on clinical pharmacology, as well as the principles of evidence; developing the ability to competently select the most effective and safe medications or their combinations according to their pharmacodynamic and pharmacokinetic properties; develop skills of preventing adverse drug reactions, reducing their manifestations in case of given pathology and eliminating of consequences of these reactions; acquire the basics of pharmacoeconomic knowledge when choosing medications from the perspective of evidence-based medicine.

Objectives of mastering the discipline:

1. Learn about the modern stages of creating medications, using modern international standards in preclinical (GLP) and clinical (GCP) research and production (GMP) of medicines;
2. Learn to analyze the effect of medications by the totality of their pharmacological effects, mechanisms and localization of the action, pharmacokinetic parameters, possible side effects and toxicological manifestations when using them;
3. Learn to assess the possibilities of choosing and using medicines based on ideas about their properties for the purposes of effective and safe prevention, pharmacotherapy and diagnosis of diseases of individual systems of the human body;
4. Acquire knowledge on the principles of prescription process and formatting, develop the ability to write prescriptions of medicines in various dosage forms, as well as for certain pathological conditions, based on the peculiarities of pharmacodynamics and pharmacokinetics of drugs;
5. Acquire skills of organization of work with medical substances, basic skills of managing prescription documents, rules for storing medications from the list of highly potent and poisonous, as well as narcotic medications and psychotropic substances;
6. Develop the skills required to solve certain research and scientific-applied problems in the field of pharmacology taking into account ethical, deontological aspects, basic information security requirements;
7. Develop skills of a healthy lifestyle, work life balance, safety regulations and environmental safety control.

2. DISCIPLINE AS PART OF THE BASIC EDUCATIONAL PROGRAM

Discipline **Б1.О.21 Clinical pharmacology** is included in the Mandatory part of the Unit 1 of the basic educational program for the specialty 31.05.01 General Medicine for international students (in English), 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), and is part of the 11th semester’s curriculum

3. PLANNED LEARNING OUTCOMES OF THE DISCIPLINE

3.1. Mastering the discipline **Б1.О.21 Clinical pharmacology** 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**
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-5_1- assesses the morphofunctional state based on the acquired knowledge CI.GPC-5_2- distinguishes between pathological and physiological processes, identifies etiology of changes CI.GPC-5_3- provides diagnostic assessment of the identified changes

3.2. Types of professional activity corresponding to competencies developed over the course of mastering **Б1.О.21 Clinical pharmacology**:

Types of professional activity objectives

1. Medical

Kinds of professional activity objectives

1. 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**
			11
			hours
1		2	3
Classroom hours (total), including:		**72**	**72**
Lectures (L)		20	20
Practical classes (C)		52	52
Electronic educational resource (EER): including online asynchronous lectures		-	-
Independent work of the student (IW), including:		**36**	**36**
Preparing for classes (CP)		4	4
Working with prescriptions workbook		18	18
Preparing for continuous assessment (CAP)		14	14
Preparation for interim assessment (IAP)			
Interim assessment			
Type of interim assessment	pass/fail test (T)	T	T
	exam (E)		
TOTAL: TOTAL credit value	hrs.	**108**	**108**
	credits	**3**	**3**

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. 11	
1.	Introduction. Subject of clinical pharmacology. Terminology and concepts. Subject and objectives of clinical pharmacology. Stages of study and registration of medicines. Clinical trials	2
2.	Sections of clinical pharmacology. Drug interactions. Fundamentals of rational pharmacotherapy. Adverse Drug Reactions	2
3.	Significance of pharmacokinetics and pharmacodynamics of medications in prescription. Pharmacogenetics	2
4.	Clinical pharmacology of medications used to treat hypertension. Clinical pharmacology of medications used to treat coronary heart disease (CHD)	2
5.	Clinical pharmacology of antiarrhythmic medications. Pharmacotherapy of chronic heart failure	2
6.	Clinical pharmacology of medications affecting bronchial patency	2
7.	Clinical pharmacology of agents affecting the organs of digestion	2
8.	Clinical pharmacology of antimicrobial agents. Basic principles of rational antibacterial therapy	2
9.	Clinical pharmacology of antituberculous medications	2
10.	Clinical pharmacology of antifungal agents. Clinical pharmacology of antiviral agents	2
	Hours per semester total	**20**

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

No.	Practical Class Topic	Hours
1	2	3
	Semester No. 11	
1	Subject of clinical pharmacology. Terminology and concepts. Sections of clinical pharmacology. Clinical pharmacokinetics and pharmacodynamics	2
2	Fundamentals of rational pharmacotherapy. Adverse Drug Reactions	2
3	Evidence-based medicine. Clinical trials	2
4	Final class on the topic: "General concepts of clinical pharmacology"	2
5	Clinical pharmacology of general and local anesthetics and myorelaxants	2
6	Pharmacotherapy of pain	2
7	Clinical pharmacology of psychotropic substances	2
8	Final class on the topic: "Medications affecting the central nervous system. Anesthetics (painkillers)"	2
9	Clinical pharmacology of medications used to treat hypertension	2
10	Clinical pharmacology of medications used to treat coronary heart disease (CHD)	2
11	Clinical pharmacology of antiarrhythmic medications	2
12	Pharmacotherapy of chronic heart failure	2
13	Clinical pharmacology of medications affecting the hemostasis system	2
14	Final class on the topic: "Clinical pharmacology of medications affecting cardiovascular system"	2
15	Clinical pharmacology of medications used to treat bronchial asthma and COPD	2

16	Clinical pharmacology of glucocorticosteroids	2
17	Clinical pharmacology of agents used to treat gastric and duodenal ulcer	2
18	Clinical pharmacology of medications affecting gastro-intestinal motility	2
19	Clinical pharmacology of hypoglycemic agents	2
20	Final class on the topic: "Agents affecting respiration, digestion and metabolism"	2
21	General principles of rational antimicrobial chemotherapy	2
22	Clinical pharmacology antibacterial and antiseptic agents	2
23	Clinical pharmacology of antituberculous medications	2
24	Clinical pharmacology of antifungal agents	2
25	Clinical pharmacology of antiviral agents	2
26	Final class on the topic: "Clinical pharmacology of antimicrobial agents"	2
	Hours per semester total	**52**

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. 11		
1	Section 1. General concepts of clinical pharmacology	Preparing for practical classes; working with educational materials; preparing for tests; solving practice problems / working with case studies and analyzing the result	7
2	Section 2. Clinical pharmacology of neurotropic agents	Preparing for practical classes; working with educational materials; preparing for tests; preparing for discussion; solving practice problems / working with case studies and analyzing the result	7
3	Section 3. Clinical pharmacology of agents affecting cardiovascular function	Preparing for practical classes; working with educational materials; preparing for tests; preparing for discussion; solving practice problems / working with case studies and analyzing the result	7
4	Section 4. Clinical pharmacology of drugs affecting respiratory, digestive and metabolic organs	Preparing for practical classes; working with educational materials; preparing for tests; preparing for discussion; solving practice problems / working with case studies and analyzing the result	7
5	Section 5. Clinical pharmacology of antimicrobial agents	Preparing for practical classes; working with educational materials; preparing for tests; preparing for discussion; solving practice problems / working with case studies and analyzing the result	8
	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	Pharmacology, Textbook (Electronic resourse)	Kharkevitch D.A.	Kharkevitch, D. A. Pharmacolog: Textbook / Translation of Russian textbook, 12th edition, revised and improved. - M. : ГЭОТАР-Медиа, 2018. - 2nd edition. - 680 pages with illustrations. - 680 с. - ISBN 978-5-9704-4307-1. URL : https://www.studentlibrary.ru/book/ISBN9785970443071.html	Unlimited access
2	Pharmacology. Illustrated textbook (Electronic resourse)	Alyautdin R.N.	Москва : ГЭОТАР-Медиа, 2020. - 312 с. - ISBN 978-5-9704-5665-1. - Текст : электронный // ЭБС "Консультант студента" : [сайт]. - URL : https://www.studentlibrary.ru/book/ISBN9785970456651.html	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	Pharmacology: practical manual [Electronic resourse]	Vengerovsky A.I.	Kogay L. V. Pharmacology: practical manual / L. V. Kogay, O. E. Vaizova, A. I. Vengerovsky. - Томск: Издательство СибГМУ, 2019. - 230 с. - Текст: электронный // ЭБС "Букап" : [сайт]. - URL : https://www.books-up.ru/ru/book/pharmacology-practical-manual-10236726/	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/

Additional online resources:

	Resource name	*URL*
1	PubMed	https://pubmed.ncbi.nlm.nih.gov/
2	FDA.Drugs	https://www.fda.gov/drugs

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 for international students (in English) 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	Assessment criteria
Assistance in personal growth	Overt Talks and problem-centric debates aimed at promotion of healthy lifestyle. Participation in interdepartmental conferences aimed at formation of healthy lifestyle and development of skills necessary to preserve and improve health.	Portfolio
	Covert – creating atmosphere and infrastructure. Developing a culture of healthy lifestyle, the ability to preserve and improve health. 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). Short discussions on current significant events in case the latter occur.	Portfolio
	Covert Focusing on civic values-oriented position and legal awareness. Cultivating mindful social position during professional activity.	
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.	Portfolio
	Covert Identification in social structure during period of education and in professional activity.	