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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.15 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.15 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.15 Pharmacology

The purpose of mastering the discipline is obtaining systemic theoretical and applied knowledge on the essence, methods, means, and principles of general and special (specific) pharmacology, as well as preparation for the practical medical activity.

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. Form a system of basic, fundamental medical and pharmacological knowledge about medications (mechanisms of action of various groups of medications, their pharmacological effects, indications for use and contraindications);
3. Develop the ability to evaluate the possibilities of choosing and using medications based on ideas about their properties in order to effectively and safely prevent, treat, and diagnose diseases of individual systems of the human body, diagnose and eliminate adverse drug reactions (ADRs);
4. Master the principles of prescriptions; develop the ability to write prescriptions for various dosage forms, as well as in certain pathological conditions, based on the peculiarities of pharmacodynamics and pharmacokinetics of medications;
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 skills of working with scientific literature and official statistical reviews;
7. Form the skills of communication with the team;
8. 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.15 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 5th and 6th semesters' curriculum.

3. PLANNED LEARNING OUTCOMES OF THE DISCIPLINE

3.1. Mastering the discipline **Б1.О.15 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		
Healthy lifestyle	GPC-3. Is capable of counteracting use of performance-enhancing drugs in sports	CI.GPC-3_1- has a grasp of pharmacological support in sports medicine CI.GPC-3_2- differentiates between performance-enhancing drugs and allowed drugs CI.GPC-3_3- has a grasp of measures against the use of performance-enhancing drugs in sports

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
Treatment of diseases and conditions	GPC-7. Is able to prescribe treatment and monitor its efficacy and safety	CI.GPC-7_1- prescribes treatment, selects dosage of medications and treatment regimens in accordance with existing guidelines with no outside help CI.GPC-7_2- monitors the efficacy of treatment and adjusts the medication regimen if necessary CI.GPC-7_3- considers contraindications when prescribing treatment and identifies adverse drug reaction

3.2. Types of professional activity corresponding to competencies developed over the course of mastering **Б1.О.15 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**	
			5	**6**
			hours	**hours**
1		2	3	4
Classroom hours (total), including:		**138**	**92**	**46**
Lectures (L)		42	28	14
Practical classes (C)		96	64	32
Independent work of the student (IW), including:		**78**	**52**	**26**
Preparing for classes (CP)		32	22	10
Working with prescriptions workbook		20	15	5
Preparing for continuous assessment (CAP)		19	15	4
Preparation for interim assessment (IAP)		7		7
Interim assessment		36		36
Type of interim assessment	pass/fail test (T)			

	exam (E)	E		E
TOTAL: TOTAL credit value	hrs.	**252**	**144**	**108**
	credits	**7**	**4**	**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. 5	
1.	Introductory lecture. General pharmacology. Principles of finding new Medications. Evidence-Based Medicine: Principles, Levels of Evidence	2
2.	General pharmacology. Pharmacokinetics. Pharmacodynamics	2
3.	Agents affecting efferent innervation I. Direct and indirect cholinomimetics. M-choline blockers (muscarinic antagonists)	2
4.	Agents affecting efferent innervation II. N-cholinomimetics. N-choline blockers (nicotinic antagonists)	2
5.	Agents affecting efferent innervation III. Adrenergic agonists. Adrenergic antagonists. Sympatholytics (sympathoplegics)	2
6.	Pharmacological regulation of histamin-, seroton-, and purinergic synapses. Dopaminergic medications	2
7.	General anesthetics. Hypnotics. Anticonvulsants. Antiparkinsonian medications	2
8.	Neuroleptics. Tranquilizers. Antidepressants	2
9.	Physiology and pharmacology of pain. Narcotic analgesics	2
10.	Non-narcotic analgesics. Nonsteroidal anti-inflammatory drugs (NSAIDs)	2
11.	Antiarrhythmics. Substances increasing myocardial contractility	2
12.	Antianginal agents. Anti-atherosclerotic medications	2
13.	Antihypertensive medications. Diuretics	2
14.	Medications affecting blood coagulation and anticoagulation. Medications affecting hematopoiesis and regeneration	2
Hours per semester total		**28**
	Semester No. 6	
1.	Performance-enhancing drugs in sports. List of prohibited substances and methods. Medicines approved for use in sports	2
2.	Medications affecting appetite, motor function, and secretion in GI tract. Gallstone solubilizing agents	2
3.	Preparations of polypeptide hormones, amino acid derivatives, their synthetic substitutes and antagonists	2
4.	Preparations of steroid hormones	2
5.	Medications affecting immunity. Medications affecting blood formation. Anticancer agents	2
6.	Antimicrobial chemotherapy. Antibiotic medications. Classification and mechanism of action. General principles of antimicrobial chemotherapy	2
7.	Antifungal and antiviral agents	2
Hours per semester total		**14**

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 to the general prescription. Solid dosage forms and rules for prescribing them. Semi-solid (soft) dosage forms and rules for prescribing them. Liquid dosage forms and rules for prescribing them	4
2	General pharmacology. Principles of Finding New Medications. Evidence-Based Medicine: Principles, Levels of Evidence. Pharmacokinetics. Pharmacodynamics	4
3	Knowledge control: "Module 1. General pharmacology and general prescription" Agents affecting afferent innervation	4
4	M-cholinergic agents. N-cholinergic agents	4
5	Adrenergic agents. Sympathomimetics. Sympatholytics. Dopaminergic medications. Pharmacological Regulation of histamin- and serotonergic synapses	4
6	General anesthetics. Ethyl alcohol. Medication for treatment of alcoholism	4
7	Hypnotics. Antipsychotics. Medications for treatment of mania. Anticonvulsants. Antiparkinson agents	4
8	Antidepressants. Anxiolytics, sedatives. Psychostimulants. analeptics. Nootropic medications	4
9	Anesthetics (painkillers). Opioid (narcotic) analgesics. Non-opioid (non-narcotic) analgesics. Nonsteroidal anti-inflammatory drugs (NSAIDs). Knowledge control: "Module 2. Agents affecting the central nervous system"	4
10	Cardiotonic agents. Principles of treating heart failure. Antianginal agents	4
11	Hypotensive (antihypertensive) medications. Diuretics. Antiarrhythmics	4
12	Anti-atherosclerotic medications. Medications affecting blood coagulation, anticoagulation, and thrombogenesis. Medications affecting hematopoiesis and regeneration	4
13	Mucoactive agents (expectorants): stimulant expectorants and mucus-thinning agents. Cough suppressants (antitussive agents) (central and peripheral action). Stabilizers of mast cell membranes. Leukotriene receptor inhibitors. Clinical and pharmacological approaches to the selection and use of phytopreparations for lung diseases	4
14	Medications affecting gastrointestinal tract. Part I	4
15	Medications affecting gastrointestinal tract. Part II Knowledge control: "Module 3. Medications affecting the functions of executive organs"	4
16	Performance-enhancing drugs in sports. List of prohibited substances and methods. Pharmacological characteristics of prohibited substances: narcotic substances, diuretics, peptide and glycoprotein hormones and their analogues. Medicines approved for use in sports	4
Hours per semester total		**64**
	Semester No. 6	
1	Preparations of polypeptide hormones. Hypoglycemic agents. Principles of diabetes treatment	4
2	Preparations of steroid hormones. Antitussive agents and expectorants	4
3	Medications affecting immunity. Medications affecting blood formation. Anticancer agents	4
4	Pharmacological characterization of vitamins. Medications that regulate the level of calcium and phosphorus in the body Knowledge control: "Module 4. Replacement therapy agents with a predominant effect on the tissue metabolism, inflammation, and immune processes"	4
5	General principles of rational antimicrobial chemotherapy. Antibiotic medications	4
6	Antiseptics and disinfectants. Synthetic antibacterial chemotherapeutic medications	4
7	Antifungal agents. Antiparasitic agents. Antiviral agents.	4

8	Antituberculous medications. Knowledge control: "Module 5. Antimicrobial, antiviral and antiparasitic agents"	4
Hours per semester total		**32**

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 pharmacology and general prescription" Agents affecting afferent innervation	1. Working with the website of the Ministry of Health of the Russian Federation https://www.rosminzdrav.ru/ http://www.pharmgkb.org/ 2. Solving practice problems / working with case studies; 3. Working with prescriptions workbook; 4. Preparing for continuous assessment	17
2	Module 2. Agents affecting the central nervous system	1. Preparing for classes, writing a report on the results; 2. Working with prescriptions workbook; 3. Solving practice problems / working with case studies; 4. Preparing for continuous assessment	17
3	Module 3. Medications affecting the functions of executive organs	1. Preparing for classes, writing a report on the results; 2. Working with prescriptions workbook; 3. Solving practice problems / working with case studies; 4. Preparing for continuous assessment	18
Hours per semester total			**52**
	Semester No. 6		
1	Module 4. Replacement therapy agents with a predominant effect on the tissue metabolism, inflammation, and immune processes	1. Preparing for classes, writing a report on the results; 2. Working with prescriptions workbook; 3. Solving practice problems / working with case studies; 4. Preparing for continuous assessment	13
2	Module 5. Antimicrobial, antiviral and antiparasitic agents	1. Preparing for classes, writing a report on the results; 2. Working with prescriptions workbook; 3. Solving practice problems / working with case studies; 4. Preparing for continuous assessment; 5. Working with the website of the U.S. Food and Drug Administration https://www.fda.gov/drugs	13
Hours per semester total			**26**

5. REQUIREMENTS FOR IMPLEMENTATION OF DISCIPLINE

5.1. Discipline Requirements for Educational Materials and Provided Information

Essential reading

No.	Name/Title,	Author(s)/Editor	Publisher Imprint, Web	Number of

	Resource Type		Address	Copies (accesses) in the Library and Information Center
1	**2**	**3**	**4**	**5**
1	Pharmacology, Textbook [Электронный ресурс]	Kharkevitch D.A.	Kharkevitch, D. A. Pharmacology : Textbook / Translation of Russian textbook, 12th edition, revised and improved. - M. : ГЭОТАР-Медиа, 2018. - 2nd edition. - 680 pages with illustrations. - 680 c. - 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]	A. I. Vengerovsky.	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 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.	