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Информация о владельце:
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Дата подписания: 13.01.2026 14:04:06
Уникальный программный ключ:
89bc0900301c561c0dcc38a48f0e3de679484a4c

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.06 Biology

(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 Biology, Botany and Ecology

Vladivostok, 2025

Program of the discipline **Б1.О.06 Biology** 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 Biology, Botany and Ecology of the FSBEI HE PSMU of the Ministry of Health of Russia, under the guidance of the head of the department Candidate of Medical Sciences, Associate Professor Zenkina V.G.

Developed by:

Head of Department	Candidate of Medical Sciences, Associate Professor	Zenkina V.G.
(position held)	(academic degree, academic title)	(full name)
Assistant Professor	Candidate of Medical Sciences	Solodkova O.A.
(position held)	(academic degree, academic title)	(full name)

1. GENERAL PROVISIONS

1.1. Purpose and Objectives of Mastering Б1.О.06 Biology

The purpose of mastering the discipline is to acquire systemic fundamental knowledge, develop skills and abilities related to general biological laws that are of greatest interest to practical health care; to prepare students for systematic perception of general medical, social, and clinical disciplines and to develop one's natural science worldview and logic of biological thinking necessary for further development of the practical activity of a doctor.

Objectives of mastering the discipline:

1. Learning organization and functioning of living systems and general properties of living things; general patterns of passing down and changes in hereditary traits and properties in generations and their role in human hereditary pathology;
2. Learning general patterns of the embryogenesis, including human embryonic development;
3. Learning how to carry out diagnostic and preventive measures aimed at preventing parasitic diseases;
4. Learning about the main directions of evolution of systems and organs; general laws of biosphere development and the role of man as a creative ecological factor at different stages of anthropogenesis.

2. DISCIPLINE AS PART OF THE BASIC EDUCATIONAL PROGRAM

Discipline **Б1.О.06 Biology** 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 1st and 2nd semesters' curriculum.

3. PLANNED LEARNING OUTCOMES OF THE DISCIPLINE

3.1. Mastering the discipline **Б1.О.06 Biology** is aimed at the development of students' competencies. The discipline facilitates the development of students' competencies corresponding to the types of professional activity.

Competency Code	**Competency Description**	**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-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.06 Biology**:

Types of professional activity objectives

1. *Medical*

Kinds of professional activity objectives

1. *Disease prevention*

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	
			1	2
			hours	hours
1		2	3	4
Classroom hours (total), including:		**100**	**50**	**50**
Lectures (L)		20	10	10
Practical classes (C)		80	40	40
Independent work of the student (IW), including:		**44**	**22**	**22**
Electronic educational resource (EER)				
Preparing for classes (CP)		22	14	8
Preparing for continuous assessment (CAP)		16	8	8
Preparation for interim assessment (IAP)		6		6
Interim assessment				
Type of interim assessment	pass/fail test (T)	T		T
	exam (E)			
TOTAL: TOTAL credit value	hrs.	**144**	**72**	**72**
	credits	**4**	**2**	**2**

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. 1	
1.	Biology in the system of medical sciences. Biology of the eukaryotic cell. Cell proliferation	2
2.	Patterns of trait inheritance at the organism and cellular levels	2
3.	Patterns of inheritance at the molecular level. Forms of variability	2
4.	Human genetics. Examination methods	2
5.	Developmental biology	2
	Hours per semester total	**10**
	Semester No. 2	
1.	Parasitism phenomenon. Medical protozoology	2
2.	Ecological basis of parasitism in the Platyhelminthes (Flatworms) phylum	2
3.	Ecological basis of parasitism in the Nematoda (Roundworms) phylum	2
4.	Medical arachnoenthomology	2
5.	Phylogeny of the organ systems of the body. Congenital anomalies	2
	Hours per semester total	**10**

Implementation of the lecture course on “Biology” (which is implemented as a part of the 1st Year curriculum according to the BEP for the specialty 31.05.01 General Medicine for international students (in English)) in full is possible by using asynchronous e-learning technologies on the online education web portal of FSBEI HE PSMU of the Ministry of Health of Russia (decree No. 236 dated April 24, 2025 “On execution of Order No. 339-OD “On development of digital lecture course content for the specialty 31.05.01 General Medicine (1st Year)” dated November 2, 2024).

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

No.	Practical Class Topic	Hours
1	2	3
	Semester No. 1	
1	Configuration of optical devices. Microscopy rules	4
2	Biology of the eukaryotic cell	4
3	Morphology and function of interphase and mitotic nuclei	4
4	Cell proliferation. Meiosis. Gametogenesis	4
5	Post-module knowledge assessment: "Cell biology"	4
6	Patterns of trait inheritance at the organism level. Interaction of allelic and non-allelic genes	4
7	Patterns of trait inheritance at the cellular level. Genetics of sex. Gene linkage	4
8	Patterns of trait inheritance at the molecular level. Forms of variability	4
9	Human genetics. Examination methods	4
10	Post-module knowledge assessment: "Fundamentals of general and molecular genetics"	4
	Hours per semester total	**40**
	Semester No. 2	
1	Parasitism phenomenon. Medical protozoology	4
2	Ecological basis of parasitism in the Platyhelminthes (Flatworms) phylum. Trematodes	4
3	Ecological basis of parasitism in the Platyhelminthes (Flatworms) phylum. Cestodes	4
4	Ecological basis of parasitism in the Nematoda (Roundworms) phylum	4
5	Medical arachnoenthomology	4
6	Post-module knowledge assessment: "Parasitism phenomenon and bioecological diseases"	4
7	Developmental biology	4
8	Phylogeny of the organ systems of the body. Congenital anomalies	4
9	Anthropology. Somatotypes (body types)	4
10	Interim assessment (test format)	4
	Hours per semester total	**40**

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. 1		
1	Cell biology	Preparing for practical classes, tests, continuous assessment, solving practice problems, working with case studies, and working with microscope slides	10
2	Fundamentals of general and molecular genetics	Preparing for practical classes, tests, continuous assessment, solving practice problems, and working with case studies	12
	Hours per semester total		**22**
	Semester No 2		

1	Parasitism phenomenon and bioecological diseases	Preparing for practical classes, tests, continuous assessment, solving practice problems, working with case studies, parasitology atlas, and working with microscope slides; Writing library-research papers	14
2	Developmental biology. Phylogeny of the organ systems of the body. Anthropogeny	Preparing for practical classes, tests, continuous assessment; Writing library-research papers	8
	Hours per semester total		**22**

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	Биология: учебник: в 2 т. [Электронный ресурс] / под ред. В. Н. Ярыгина.	В.Н. Ярыгин	М.: Издательство Юрайт, 2025. - 823 с. - URL: https://urait.ru/	Unlimited access
2	Биология: учебник [Электронный ресурс]	М.М. Азова, О.Б. Гигани, О.О. Гигани	М.: ГЭОТАР-Медиа, 2023. - 712 с. URL: http://studentlibrary.ru	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	Учение о клетке: учеб. пособие для вузов	В.Г. Зенкина, О.А. Солодкова, Г.Г. Божко	Владивосток; Медицина ДВ, 2022. – 168 с. URL: http://books-up.ru/ URL: https://e.lanbook.com	Unlimited access
2	Медицинская арахноэнтомология: учеб. пособие	Г.Г. Божко, В.Г. Зенкина, О.А. Солодкова, А.А. Агибалова	Владивосток; Медицина ДВ, 2020. – 137 с. URL: https://books-up.ru	Unlimited access
3	Генетика человека: учеб. пособие	В.Г. Зенкина, О.А. Солодкова, Г.Г. Божко	Владивосток; Медицина ДВ, 2019. – 93 с. URL: https://www.books-up.ru/	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	Assessment criteria
Assistance in personal growth	Overt Discipline Б1.О.06 Biology 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. Discipline Б1.О.06 Biology 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 Discipline Б1.О.06 Biology	Portfolio

	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.	
	Covert Discipline Б1.О.06 Biology Focusing on civic values-oriented position and legal awareness. Cultivating mindful social position during professional activity.	
Social values	Overt Discipline Б1.О.06 Biology 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. Arranging events aimed at developing ethical norms and norms of conduct in sports community.	Portfolio
	Covert Discipline Б1.О.06 Biology Identification in social structure during period of education and in professional activity.	