

MINISTRY OF HEALTH OF THE RUSSIAN FEDERATION  
FEDERAL STATE BUDGETARY EDUCATIONAL INSTITUTION  
OF HIGHER EDUCATION  
"DAGESTAN STATE MEDICAL UNIVERSITY"

(FSBEI HE DSMU of the Ministry of Health of Russia)



AGREED  
Vice-rector for academic affairs, Ph.D.  
YES. Omarova

*YES. Omarova*  
" 30 " August 2021

THE WORKING PROGRAM OF THE DISCIPLINE  
"ECOLOGY OF PARASITES"

Discipline index: - **B1**.

Specialty (direction): **31.05.01 "General Medicine"**

Higher education level: **Specialty**

Graduate qualification: **General practitioner**

Faculty: **medical**

Department: **Medical Biology**

Form of study: **full-time**

Course: **1**

Semester: **II**

Total labor intensity (in credit units / hours): **2 c.u. / 72 hours**

Lectures: **8 h.**

Practical lessons: **16 h.**

Independent work: **48 h.**

Control form: **credit in the II semester**

The work program of the discipline "Ecology of parasites" was developed in accordance with the Federal State Educational Standard 3 ++ VO in the direction of training (specialty) 05/31/01 General medicine (higher education level - specialty), approved by order of the Ministry of Education and Science of the Russian Federation No. 988 of August 12, 2020 ...

The working program of discipline approved at the meeting of the Department of Medical Biology of 26 on August 2021 city of, number 1 protocol.

**The work program has been agreed upon:**

1. Director of NMB DSMU \_\_\_\_\_ (V.R. Musaeva)
2. Head of UUMR, S and KCO \_\_\_\_\_ (A.M. Karimova)
3. Dean of the Faculty of General Medicine \_\_\_\_\_ (R.M. Ragimov)

Head of the Department, Doc. of Biol. Sciences, prof.

\_\_\_\_\_ (A.M. Magomedov)

**Work program developers:**

1. Associate Professor of the Department of Medical Biology, Ph.D. \_\_\_\_\_ E.M. Musinova
2. Head Department of Medical Biology, Doctor of Biological Sciences, prof. \_\_\_\_\_ A.M. Magomedov
3. Associate Professor of the Department of Medical Biology, Ph.D. \_\_\_\_\_ K.G. Alieva

**Reviewers:**

1. M.G. Magomedov - Doctor of Medical Sciences, Professor, Head. Department of General Hygiene and Ecology, DSMU
2. R.A. Khalilov - Ph.D., Associate Professor, Dean of the Faculty of Biology, DSU

## CONTENT

No.	section of the discipline work program	p.
1.	The purpose and objectives of mastering the discipline	4
2.	Requirements for the results of mastering the discipline	5
3.	Place of the discipline in the structure of the educational program	7
4.	The scope of the discipline and types of educational work	8
5.	Content of the discipline	8
5.1.	Sections of the discipline and competencies that are formed during their study	
5.2.	Sections of the discipline and labor intensity by type of educational work	13
5.3.	Thematic plan of lectures	14
5.4.	Name of topics for practical lessons, indicating the number of hours	15
5.5.	Educational and methodological support for independent work in the discipline	19
6.	Evaluation tools for monitoring progress and intermediate certification based on the results of mastering the discipline	23
6.1.	The list of competencies with an indication of the stages of their formation in the process of mastering the work program of the discipline	
6.2.	Description of indicators and criteria for assessing the competence specified in section 2, at various stages of its formation, description of assessment scales	25
6.3	Evaluation tools for monitoring progress	
6.4	Interim certification based on the results of mastering the discipline	29
7.	Educational-methodical and informational support of the discipline	
7.1	Main literature	32
7.2	additional literature	
7.3	Resources of the information and telecommunications network "Internet"	
7.4	Information Technology	
8	Material and technical support of the discipline	35
9	Using innovative (active and interactive) teaching methods	36
10	methodological support of the discipline	
12	Features of the organization of training in discipline for people with disabilities and people with disabilities	38
13	Work program changes registration sheet	
	<i>Appendix: Appraisal Fund</i>	

## **I. PURPOSE AND OBJECTIVES OF THE DISCIPLINE DEVELOPMENT**

**The purpose of studying the discipline "Ecology of parasites"** is to develop students' in-depth basic knowledge of the ecology of parasites, which determine the existence and interaction of humans with parasitic systems of different levels of organization (organisms, populations, biocenoses and ecosystems).

### **Objectives of mastering the discipline:**

1. Study of the biological foundations of the historical development and the current state of ideas about parasitism;
2. Study of the circulation of pathogens in nature;
3. Disclosure of the relationship between general and specific issues of epidemiology and epizootology of a number of the most important parasitic diseases;
4. Determination of the links between the taxonomy and ecology of parasites and vectors, patterns of formation of life patterns of the main groups of parasites and vectors;
5. Study of the main categories of parasitic diseases (anthroponoses, anthrozoonoses, zoonoses);
6. Disclosure of patterns of formation of natural and anthropurgic foci of parasitic diseases;
7. Development of scientific foundations for the diagnosis and treatment of parasitic diseases based on knowledge of the harmful effects of parasites, as well as methods of prevention and control of parasites and vectors;
8. Creation of a system for the prevention and elimination of parasitic diseases.

## II. EXPECTED DISCIPLINE LEARNING OUTCOMES

Competency code and name	Competency achievement indicator code and name
<b>General professional competencies</b>	
<b>OPK-2-</b> Able to carry out and monitor the effectiveness of measures for prevention, the formation of a healthy lifestyle and sanitary and hygienic education of the population	<b>ID-2 OPK-2</b> Carries out preventive measures, the formation of a healthy lifestyle and sanitary and hygienic education of the population
<p><b>Know:</b> basic concepts and problems of ecology, the phenomenon of parasitism and bioecological diseases; -definition of the concept of "parasites" according to V.A. Dogel; - the origin of parasitism; - forms of parasitism, relationships in the "parasite-host" system, concepts and terms: anthroponosis and zoonosis, parasitic natural focal, vector-borne and non-transmissible diseases; -the study of E.N. Pavlovsky (our fellow countryman) about the natural focus of diseases; -the structure of the natural hearth; - rules of safety measures and work in physical, chemical, biological laboratories with reagents, devices, animals.</p>	
<p><b>Be able to:</b> Correctly use the concepts and terms on the ecology of parasites; -use knowledge on the ecology of parasites for the identification of human parasites, diagnosis and prevention of parasitic diseases; -use physical, chemical and biological equipment.</p>	
<p><b>Possess:</b> The basic concepts and terms of the ecology of parasites; - identification of the parasite at different stages of development (egg, larva, adult).</p>	

## III. PLACE OF DISCIPLINE IN THE STRUCTURE OF THE EDUCATIONAL PROGRAM

The educational discipline "Ecology of parasites" refers to block B1.V.DV. the variable part of the disciplines.

In accordance with the current curriculum for the specialty 31.05.01 General medicine is studied in the second semester.

The ecology of parasites is in a logical and substantive-methodological connection with such disciplines of the basic part of the natural science cycle as biology; general hygiene, medicinal plants of Dagestan; normal physiology; microbiology, virology.

The basic knowledge required for studying the discipline is formed:

- in the study of humanitarian, social and economic disciplines (philosophy, bioethics, psychology);
- in the study of mathematical, natural science, biomedical disciplines (medical and biological physics, general and inorganic chemistry, organic chemistry, analytical chemistry, molecular biology, botany);

- in the study of professional and special disciplines (first aid, medicine in emergency situations, life safety, general hygiene).

#### IV. SCOPE OF DISCIPLINE AND TYPES OF EDUCATIONAL WORK

The total workload of the discipline is 2 credit units.

Type of educational work		Total hours	Semesters # 2
<b>one</b>		<b>2</b>	<b>3</b>
<b>Contact work of students with the teacher, including</b>			
<b>Classroom lessons (total)</b>			
Lectures (L)		8	8
Practical lessons (PZ)		16	16
<b>Student independent work (SRO)</b>		<b>48</b>	<b>48</b>
Type of intermediate certification		<b>credit</b>	
<b>TOTAL: Total labor intensity:</b>	Hour.	<b>72</b>	<b>72</b>
	Z.e	<b>2</b>	<b>2</b>

#### V. CONTENT OF THE EDUCATIONAL DISCIPLINE

##### 5.1. Sections of the discipline and competencies that are formed during their study

No.	The name of the discipline section (module)	Section Contents	Supervised competency code (or part of it)
1	2	3	4
1.	<b>General parasitology</b>	The place of parasitology in the complex of other sciences. The contribution of domestic and foreign scientists to the development of ecological parasitology. The main sections of parasitology: general, medical, veterinary, agronomic or phytoparasitology. The history of the development of parasitology. The history of the emergence of parasitism. Forms of symbiosis. Parasitism as a biological phenomenon. Classification of parasites. Ways of origin of parasitism. Interaction of the parasite and the host at the level of individuals and populations. Life cycles of parasites. The main, intermediate, reservoir hosts. Classification of parasitic diseases. The teachings of E.N. Pavlovsky	<b>ID-2 OPK-2</b>

		on natural focal diseases.	
2.	<b>Medical protozoology</b>	<p>General characteristics of the type Protozoa, classes Sarcodes and Flagellates, Ciliates and Sporozoans, morphology of representatives, ubiquitous and tropical protozoa, development cycles, habitat in / on the human body, protozoses are carriers of protozoses. Free living amoebas, capable of passing to parasitism. The clinical picture of protozoses. Infection methods.</p> <p>Specific symptoms of protozoa, methods of laboratory diagnostics, measures of personal and social prevention, situational tasks by topic.</p>	<b>ID-2 OPK-2</b>
3	<b>Medical helminthology</b>	<p>The concept of helminths. Bio- and geo-helminths. Type Flatworms. Characteristic features of the organization. Medical value. Fluke class. Hepatic, feline, lanceolate, pulmonary flukes, schistosomas. Morphology; development cycles, ways of infection, pathogenic action, substantiation of laboratory diagnostics and prevention methods. Class Tapeworms. Bovine tapeworm, pork, dwarf, alveococcus. Wide ribbon. Morphology, developmental cycles, routes of infection, pathogenic action, substantiation of laboratory diagnostics and prevention methods. Type Roundworms. The characteristic features of the organization are medical significance. Ascaris, pinworm, whipworm, hookworm, trichinella, rishta, filaria. Morphology, developmental cycles, ways of penetration into the body, pathogenic effect, substantiation of methods of laboratory diagnostics and prophylaxis. Helminthiasis in children. Features of the prevention of enterobiasis, hymenolipidosis. Ovogelmintoscopia (scatological analysis). The concept of "transit eggs".</p>	<b>ID-2 OPK-2</b>
4	<b>Medical arachnoentomology</b>	<p>Type Arthropods and their importance in medicine. Characterization of the characteristics of the type and classes that are important in evolutionary and epidemiological terms. Crustacean class. Higher and lower crayfish are intermediate hosts of human</p>	<b>ID-2 OPK-2</b>

		helminths. Class Arachnids. Ticks: vectors, natural reservoir, ectoparasites, pathogens. Ixodes flares (dog, taiga, dermatentory) argazovye mites (township). Scabies mite. Structure, development cycles, control and prevention measures. Transovarial transmission by the taiga tick of the virus of spring-summer tick-borne encephalitis. Prevention of tick-borne encephalitis. Class Insects. Groups of epidemiological significance. Insects are carriers of pathogens of infectious and parasitic diseases (cockroaches, flies, lice, fleas, mosquitoes, mosquitoes, midges).	
--	--	--	--

### 5.2. Sections of the discipline and labor intensity by type of educational work

Section No.	Semester	The name of the discipline section	Types of educational work, hour.			Total
			Classroom		Extracurricular	
			L	PZ	SRO	
1	2	General parasitology	2	2	12	16
2	2	Medical protozoology	2	4	12	18
3	2	Medical helminthology	2	4	12	18
4	2	Medical arachnoentomology	2	6	12	20
<b>Total for the semester:</b>			8	16	48	72
<b>Type of intermediate certification</b>						credit

### 5.3. Thematic plan of lectures

Section No. la	The name of the discipline section	Lecture topics	Number of hours per semester
			No. 2
1.	<b>General parasitology</b>	L 1. Medico-biological and ecological foundations of parasitism. Forms, origin and evolution of parasitism.	2
2.	<b>Medical protozoology</b>	L.2. Classes Sarcodes, Flagellates. Sporozoans and Ciliates. Diagnostics and prevention of protozoan diseases.	2



3.	<b>Medical helminthology</b>	L. 3 Type Flatworms. Trematoda class. Cestode class. Type Roundworms. The class itself is roundworms. Intestinal and tissue nematodes.	<b>2</b>
4.	<b>Medical arachnoentomology</b>	L.4. General characteristics of representatives of the type Arthropods. Diagnostics of vector-borne diseases.	<b>2</b>
<b>TOTAL:</b>			<b>8</b>

#### 5.4. Thematic plan of practical lessons

Section No.	Chapter disciplines	Practical training topics	Forms of control		Number of hours per semester # 2
			current **	midterm *	
1.	<b>General parasitology</b>	PZ.1. " The subject and objectives of medical parasitology ."	WITH	T	2
2.	<b>Medical protozoology</b>	PZ.2. Organization and biology of the Protozoa. General characteristics and pathogenic for humans representatives of the Sarcodes and Flagellates classes.	WITH	T	2
		PZ.3. " The organization and biology are simple. General characteristics and pathogenic for humans representatives of the Sporozoa and Infusoria classes. Final control of knowledge and skills in the section "Medical protozoology".	WITH	ZS	2
3.	<b>Medical helminthology</b>	PZ.4. " The organization and biology flatworms. Trematodes. Medical value ".	WITH	T	2
		PZ.5. " The organization and biology flatworms. Cestodes. Medical value. Organization and biology of the proper Roundworms. Tissue nematodes. Filaria. Intestinal nematodes. Final control of knowledge and skills in the section "Medical helminthology".	WITH	T	2
4	<b>Medical arachnoentomology</b>	PZ.6 " Organization and biology of Arthropods. Arachnids. Medical value ".	WITH	T	2
		PZ.7 " Organization and biology of	WITH	T	2

		Arthropods. Insects I (lice, fleas, bugs, cockroaches, etc.). Medical value. "			
		PZ.8 " Organization and biology of Arthropods. Insects II (mosquitoes, mosquitoes, flies, etc.). Medical value. Final control of knowledge and skills in the section "Parasitic arthropods". Credit lesson. "	WITH	T	2
					<b>16 h .</b>
<b>TOTAL: intermediate certification (offset)</b>					<b>2 hours</b>

\* *Forms of current monitoring of progress (with abbreviations): T - testing, Pr - assessment of the development of practical skills (abilities), ZS - solving situational problems, R - writing and defending an abstract, C - interview on control questions and others.*

## 5.6. Educational and methodological support for independent work in the discipline

### 5.6.1. Student's independent work in the discipline

<b>P / p No.</b>	<b>Chapter disciplines</b>	<b>Name of works</b>	<b>Lab or capacity (hour)</b>	<b>Forms of control</b>
1.	<b>General parasitology</b>	Abstract messages on the instructions of the teacher with the preparation of multimedia presentations. Studying control questions on the topic of the lesson, drawing up a synopsis. Preparation for testing. Work with electronic educational resources located in the electronic information system of the DSMU.	12	T, P, C
2.	<b>Medical protozoology</b>	Abstract messages on the instructions of the teacher with the preparation of multimedia presentations. Study of control questions on the topic of the lesson, drawing up a synopsis. Preparation for testing. Work with electronic educational resources located in the electronic information system of the DSMU.	12	T, P, C
3	<b>Medical helminthology</b>	Abstract messages on the instructions of the teacher with the preparation of multimedia presentations. Study of control questions on the topic of the lesson, drawing up a synopsis. Preparation for testing. Work with electronic educational resources located in the electronic information system of the DSMU.	12	T, P, C

4	<b>Medical arachnoentomology</b>	Abstract messages on the instructions of the teacher with the preparation of multimedia presentations. Study of control questions on the topic of the lesson, drawing up a synopsis. Preparation for testing. Work with electronic educational resources located in the electronic information system of the DSMU.	12	T, P, C
<b>TOTAL:</b>				<b>48</b>

### 5.6.2. Subject of abstract works

#### Controlled competency codes: ID-2 OPK-2

<b>1</b>	Ubiquitous and tropical invasions.
<b>2</b>	The teachings of K.I. Scriabin on devastation and deworming.
<b>3</b>	Parasitic representatives of flagellates.
<b>4</b>	Free-living sarcodes and flagellates, their place and phylogenetic relationships in the type of protozoa.
<b>5</b>	Parasitic sporozoans of Africa
<b>6</b>	Methods for the diagnosis of cestodosis.
<b>7</b>	Epidemiology of Hymenolepiasis in India
<b>8</b>	Features of the epidemiology of echinococcosis in India and factors contributing to its spread.
<b>9</b>	Ascariasis, features of epidemiology in Africa.
<b>10</b>	Ixodid ticks are ectoparasites and vectors of animal and human diseases.

#### **Referral evaluation criteria:**

- The novelty of the summarized text: max. - 20 points;
- Degree of disclosure of the essence of the problem: max. - 30 points;
- Justification of the choice of sources: max. - 20 points;
- Compliance with design requirements: max. - 15 points;
- Literacy: max. - 15 points.

#### **Evaluation of the abstract:**

The abstract is assessed on a 100 point scale, the points are translated into the grades of academic performance as follows (the points are taken into account in the process of the current assessment of the knowledge of the program material):

- ✓ 86 - 100 points - "excellent";
- ✓ 70 - 75 points - "good";
- ✓ 51 - 69 points - "satisfactory";
- ✓ less than 51 points - "unsatisfactory".

## **VI. ESTIMATED TOOLS FOR RUNNING PERFORMANCE CONTROL AND INTERMEDIATE CERTIFICATION ON THE RESULTS OF THE DISCIPLINE DEVELOPMENT**

### **6.1. Current monitoring of progress**

#### **6.1.1. The list of competencies with an indication of the stages of their formation in the process of mastering the work program of the discipline**

No. section	The name of the discipline section (module)	Supervised competency code (or part of it)	Forms of control
1	2	3	4
1.	<b>General parasitology</b>	<b>ID-2 OPK-2</b>	1 interview; 2 – test control; 3 – situational tasks; 4- abstract
2.	<b>Medical protozoology</b>	<b>ID-2 OPK-2</b>	1 interview; 2 – test control; 3 – situational tasks; 4- abstract
3.	<b>Medical helminthology</b>	<b>ID-2 OPK-2</b>	1 interview; 2 – test control; 3 – situational tasks; 4- abstract
4.	<b>Medical arachnoentomology</b>	<b>ID-2 OPK-2</b>	1 interview; 2 – test control; 3 – situational tasks; 4- abstract

#### **6.1.2. Examples of assessment tools for current and midterm monitoring of progress**

For the current control of the progress of the discipline, the following assessment tools are used:

### **SUPERVISION INTERVIEW**

#### **SECTION No. 2**

### **PRACTICAL LESSON №2 ORGANIZATION AND BIOLOGY OF PROPOSE TYPE. PATHOGENIC FOR HUMAN REPRESENTATIVES OF CLASSES SARCODE, Flagellate.**

**Controlled competency codes: ID-2 OPK-2**

Key educational target questions:

1. Classification and characterization of the Protozoa type.
2. Characteristics of the Sarkodov class. Obligate and facultative parasites.

3. Dysentery amoeba. Life cycle, routes of infection, pathogenic action.
4. Non-pathogenic amoebae: oral, intestinal, acanthamoeba, fowler's negleria.
4. Characteristics of the Flagellates class. Features of morphology and reproduction.
5. Giardia intestinal. Features of morphology. Pathogenic action.
6. Trichomonas: intestinal, oral and vaginal.
7. Leishmania of the Old World and New World. Morphology. Life Cycles.
8. Trypanosomes. African and American trypanosomiasis, their differences.

**Evaluation criteria for monitoring progress  
(interview on the topic of the practical lesson):**

✓ "Fine":

The student has a deep knowledge of the educational material on the topic of the practical lesson, formulated a complete and correct answer to the questions of the topic of the lesson, observing the logic of the presentation of the material, shows the assimilation of the relationship of the basic concepts used in the work, was able to answer all clarifying and additional questions. The student demonstrates knowledge of theoretical and practical material on the topic of the lesson.

✓ "Good":

The student showed knowledge of the educational material, mastered the basic literature, was able to answer almost completely all the additional and clarifying questions asked. The student demonstrates knowledge of theoretical and practical material on the topic of the lesson, allowing minor inaccuracies.

✓ "Satisfactorily":

The student as a whole mastered the material of the practical lesson, did not answer all the clarifying and additional questions. The student finds it difficult to correctly assess the proposed problem, gives an incomplete answer, requiring leading questions from the teacher.

✓ "Unsatisfactory":

The student has significant gaps in knowledge of the basic educational material of the practical lesson, did not fully disclose the content of the questions, and could not answer the clarifying and additional questions. The student gives an incorrect assessment of the situation, chooses the wrong algorithm of actions. An unsatisfactory mark is given to a graduate who refused to answer the questions of the topic of the practical lesson.

At the end of each **SECTION of the** discipline, the following assessment tools are used to monitor progress:

**TESTING**

**RUNNING PERFORMANCE CONTROL - TESTS**

**THEME 2. ORGANIZATION AND BIOLOGY OF PROPOSE TYPE.  
PATHOGENIC FOR HUMAN REPRESENTATIVES OF THE CLASSES  
SARCODE AND FLAGGULAR.**

**Controlled competency codes: ID-2 OPK-2**

**1 . The presence of an undulating membrane is typical for:**

- a) dysentery amoeba
- b) Leishmania
- c) toxoplasma
- d) trypanosomes
- e) Trichomonas

**2. Intracellular parasites:**

- a) Leishmania
- b) lamblia

- c) pinworm
- d) toxoplasma
- e) Trichomonas

3. **In the life cycle, there is a change of owners in:**

- a) dysentery amoeba
- b) Leishmania
- c) toxoplasma
- d) malaria plasmodium
- e) balantidia

4. **Sexual reproduction exists in:**

- a) amoeba
- b) lamblia
- c) plasmodium
- d) toxoplasma
- e) trypanosomes

5. The **flagellate form of Leishmania parasitizes in:**

- a) mosquito
- b) tsetse flies
- c) human
- d) mosquito
- e) rodents

6. **Development with a change of owners is typical for:**

- a) balantidia
- b) dysentery amoeba
- c) lamblia
- d) malaria plasmodium
- e) trypanosome

7. **Free-living protozoa can be:**

- a) Leishmania
- b) balantidia
- c) dysentery amoeba
- d) amoeba of the *Limax* group
- e) toxoplasma

**Evaluation criteria for monitoring progress (tests):**

- ✓ "Fine":  
100-90%
- ✓ "Good":  
89-70%
- ✓ "Satisfactorily":  
69-51%
- ✓ "Unsatisfactory":  
50% and below.

Practical skills - laboratory practice

EXAMPLE!

**RUNNING PERFORMANCE CONTROL - LABORATORY PRACTICE**

**Section 2. Medical protozoology.**

**Controlled competency codes : ID-2 OPK-2**

1. Consider a micropreparation of the amoeba *Proteus* under small (ob. 0.8) and large (ob. 40) magnification of the microscope.
2. Consider a micropreparation of a dysentery amoeba under immersion.
3. Prepare a temporary preparation from the green euglena culture.
4. Examine a blood smear of a rat with a trypanosome under a microscope immersion.

**Criteria for assessing the monitoring of progress (laboratory practice):**

✓ "Unsatisfactory":

The student does not have practical skills in using a microscope

✓ " Satisfactory":

The student has basic skills in using a microscope, but makes mistakes and inaccuracies in the scientific terminology used. The student is basically able to independently examine the main organelles of protozoa.

✓ "Good":

The student possesses knowledge of all the studied program material, presents the material consistently, makes minor mistakes and shortcomings when reproducing the studied material. The student does not have sufficient skill in working with reference books, textbooks, primary sources; orientates correctly, but cannot accurately examine preparations under a microscope.

✓ "Fine":

The student independently identifies the main provisions in the studied material and is able to give a brief description of the main ideas of the studied material. The student is proficient in the use of a microscope and the technique of making temporary preparations. The student shows a deep and complete mastery of the entire volume of the studied discipline.

**DISCIPLINE CONTROL QUESTIONS**

**SECTION 1. General parasitology**

**Controlled competency codes: ID-2 OPK-2**

1. Origin and age of parasitism. Parasitism criteria.
2. Criteria for parasitism:
3. Ways of occurrence of parasitism
4. Classification of parasites and their hosts. The "parasite-host" system.
5. Classification of the hosts in depending on the developmental stage of the parasite: in depending on the conditions for the development of the parasite:
6. Morphophysiological and biological adaptations of parasites.
7. Ways and ways of human infection with parasites.

8. Pathogenic action and specificity of parasites.
9. Responses of the host to the introduction of the parasite.

**Criteria for assessing the monitoring of progress (interview):**

"Unsatisfactory":

✓ Knowledge: the student is not able to independently highlight the main provisions in the studied material of the discipline. Does not know and does not understand a significant or main part of the program material within the scope of the questions posed.

✓ Skills: the student does not know how to apply incomplete knowledge to solving specific issues.

✓ Skills: the student has no practical skills and is unable to answer a specific question.

"Satisfactory":

✓ Knowledge: the student has mastered the main content of the discipline's material, but has gaps in the assimilation of the material, which do not impede the further assimilation of the educational material in the discipline "Ecology of parasites". Has unsystematic knowledge of discipline modules. The material is presented fragmentarily, not consistently.

✓ Skills: the student has difficulty in presenting the material on the modules of the discipline "Ecology of parasites". The student is inconsistently and not systematized knows how to use incomplete knowledge of the material. The student finds it difficult to apply the knowledge necessary to solve various situational problems, when explaining specific concepts in the sections "Ecology of parasites".

✓ Skills: the student has basic skills, but makes mistakes and inaccuracies in the scientific terminology used. The student is basically able to independently determine the main provisions in the material studied.

"Good":

✓ Knowledge: The student is able to independently highlight the main provisions in the studied material. Shows knowledge of all studied program material. Gives a complete and correct answer based on the studied theoretical and practical materials; minor errors and shortcomings in the reproduction of the studied material, definitions of concepts gave incomplete, minor inaccuracies when using scientific terms.

✓ Skills: The student is able to independently highlight the main provisions in the studied material; on the basis of facts and examples to generalize, draw conclusions, establish intra-subject connections. The student is able to follow the basic rules of the culture of oral speech, use scientific terms.

✓ Skills: The student has knowledge of all the studied program material, presents the material consistently, makes minor mistakes and shortcomings when reproducing the studied material. The student does not have sufficient skill in working with reference books, textbooks, primary sources; correctly navigates and uses scientific terms.

"Fine":

✓ Knowledge: The student independently identifies the main provisions in the studied material and is able to give a brief description of the main ideas of the worked out material of the discipline "Ecology of parasites". Shows deep knowledge and understanding of the entire volume of program material.

✓ Skills: The student is able to compose a complete and correct answer based on the material studied, highlight the main provisions, independently and reasonably make analysis, generalizations, conclusions. Establishes interdisciplinary (based on previously acquired knowledge) and intra-subject connections, creatively apply the acquired knowledge to solve practical problems. Consistently, clearly, connected, reasonably and accurately presents educational material; gives an answer in a logical sequence using



accepted terminology; draws its own conclusions; formulates a precise definition and interpretation of basic concepts and rules; when answering, do not repeat the text of the textbook verbatim; present material in literary language; correctly and thoroughly answer additional questions from the teacher. Independently and rationally uses visual aids, reference materials, textbooks, additional literature, primary sources, Internet resources.

✓ Skills: The student independently identifies the main provisions in the studied material and is able to give a brief description of the main ideas of the studied material. The student shows a deep and complete mastery of the entire volume of the studied discipline.

## **SITUATION TASKS BY SECTION OF DISCIPLINE**

### **Section 2. Medical protozoology**

#### **Controlled competency codes: ID-2 OPK-2**

**Problem 1.** The patient has a fever, an enlarged liver and spleen, a decrease in the number of erythrocytes in the blood has been established. Microscopic examination of punctate smears of the sternum showed that the cells of the bone marrow contain a large number of small, round-shaped unicellular parasites devoid of flagella. The nucleus is located in the protoplasm, the blepharoplast is noticeable. When the parasite is cultivated in an artificial environment, it turns into a flagellate form. What disease can be assumed in this case?

The worker worked for two years in Angola. A month after returning, he came to the doctor with complaints of periodic fever, headaches, weakness. Examination revealed enlargement of the liver and spleen. How is the suspected disease diagnosed?

**Problem 2.** The patient has a fever, an enlarged liver and spleen, a decrease in the number of erythrocytes in the blood has been established. Microscopic examination of punctate smears of the sternum showed that the cells of the bone marrow contain a large number of small, round-shaped unicellular parasites devoid of flagella. The nucleus is located in the protoplasm, the blepharoplast is noticeable. When the parasite is cultivated in an artificial environment, it turns into a flagellate form. What disease can be assumed in this case?

**Objective 3.** A patient who recently returned from abroad was brought to your appointment. He complains of periodic attacks of fever. Every two days, the temperature rises to 40 C and stays at this level for 6-12 hours. Examination revealed enlargement of the liver and spleen. You sent the patient to the laboratory, where a decrease in the number of erythrocytes was detected, and intracellular parasites were found in the erythrocytes themselves, which are at different stages of development and have a characteristic structure. Name the disease the patient is suffering from.

**Task 4.** A patient came to your appointment who complains of loose stools with blood. You sent him to the laboratory and microscopic examination of feces revealed mucus, blood, pus and a large number of very large parasites (30-200 microns) containing two contractile vacuoles and two nuclei. Name the disease the patient is suffering from.

**Task 5.** You are undergoing medical practice in one of the cities of Central Asia. A patient has come to your appointment, who has long-term non-healing wounds on open parts of the body. You sent the patient to the laboratory and small intracellular parasites were found in the smears of the discharge from the ulcers. This confirmed the preliminary diagnosis. Name the disease the patient is suffering from.

**Criteria for assessing the current monitoring of progress (situational tasks):**

✓ "Fine":

The answer to the problem is correct. The explanation of the course of its solution is detailed, consistent, competent, with theoretical justifications (including from the lecture course), the answers to additional questions are correct, clear.

✓ "Good":

The answer to the problem is correct. The explanation of the course of its solution is detailed, but not logical enough, with isolated errors in details, some difficulties in theoretical substantiation (including from the lecture material), the answers to additional questions are correct, but not clear enough.

✓ "Satisfactorily":

The answer to the problem is correct. The explanation of the course of its solution is insufficiently complete, inconsistent, with errors, weak theoretical justification (including lecture material), with significant difficulties and errors; answers to additional questions are not clear enough, with errors in details.

✓ "Unsatisfactory":

The answer to the question of the problem is given incorrectly. The explanation of the course of its solution was given incomplete, inconsistent, with gross errors, without theoretical justification (including lecture material); the answers to additional questions are incorrect (missing).

## **6.2. Interim certification based on the results of mastering the discipline**

### **6.2.1. Intermediate certification form - credit in the 2nd semester**

#### **6.2.2. Interim certification procedure**

#### **LIST OF QUESTIONS FOR EXAMINATION ON THE DISCIPLINE "ECOLOGY OF PARASITES" FOR ORAL CONVERSATION WITH STUDENTS OF THE MEDICAL FACULTY.**

1. The essence of the phenomenon of parasitism. Classification of parasites.
2. Forms of biotic connections in nature, their meaning.
3. The origin of parasitism. Relationship in the parasite-host system.
4. Adaptations of organisms associated with a parasitic lifestyle.
5. The teachings of Acad. E. N. Pavlovsky about the natural focus of diseases. The structure of a natural transmission focus. Examples.
6. Parasitism as an ecological phenomenon.
7. Parasitology as an economic discipline. Basic concepts of ecological parasitology, their characteristics.
8. The role of domestic scientists in the development of parasitology.
9. Parasitic system, its structure and characteristics of the components. The theory of self-regulation of parasitic systems.
10. Succession of parasitic systems in conditions of anthropopression. Significance for medicine.

**6.2.4. Sample ticket.**

**Controlled competency codes: ID-2 OPK-2**

**FSBEI VO DSMU  
Ministry of Health of Russia**

**Department of Medical Biology  
Medical Faculty  
Discipline "Ecology of parasites"**

**Ticket number 2**

1. Peculiarities of relationships in the parasite-host system.
2. Balantidium. Systematics. Morphology. Pathogenic action. Clinic. Diagnostics. Prevention.
3. Pork tapeworm. Systematics. Morphology. Life cycle. Pathogenic action. Cysticercosis. Clinic. Diagnostics. Prevention.
4. Situational task.

Approved at a meeting of the department, minutes of August 26, 2021, No. 1  
Head of the  
department A.M. Magomedov  
Compiled  
by E.M. Musinova  
K.G. Alieva

**FSBEI VO DSMU  
Ministry of Health of Russia**

**Department of Medical Biology  
Medical Faculty  
Discipline "Ecology of parasites"**

**TICKET number 3**

1. Adaptations of organisms associated with a parasitic lifestyle.
2. Characteristics of the Sarkodov class. Obligate and facultative parasites.
3. Characteristics of the Sossalschik class. Flukes are human parasites.
4. Situational task.

Approved at a meeting of the department, minutes of August 26, 2021, No. 1  
Head of the  
department A.M. Magomedov  
Compiled  
by E.M. Musinova  
K.G. Alieva

**6.2.5. The system for assessing the results of mastering the discipline, a description of the assessment scales, grading.**

**Criteria for evaluating the results of mastering the discipline**

The grading system includes credit in the 2nd semester

Assessment indicators	Evaluation criteria	
	"Not credited"	"Passed"
<b>Competence code - ID-2 OPK-2</b>		
<b>know</b>	The student is not able to independently highlight the main points in the studied material and is not able to give a brief description of the main ideas of the studied material of the discipline. Shows fragmentary, scattered knowledge that cannot become the basis for the subsequent formation of skills and abilities on their basis	The student independently identifies the main provisions in the studied material and is able to give a brief description of the main ideas of the studied material of the discipline. Knows the basic concepts, laws, methods of combating and preventing parasitic infections. Shows a deep knowledge and understanding of the theoretical foundations of the discipline
<b>be able to</b>	The student is not able to describe, identify and distinguish representatives of different groups of parasites, is not able to apply incomplete knowledge to the solution of specific questions and situational tasks according to the model.	The student is able to use the knowledge gained in this discipline in the professional activity of a doctor; the skills provided for by this competence within the discipline are fully formed, when they are completed, the student chooses the best way to solve the problem.

**Vii. EDUCATIONAL - METHODOLOGICAL AND INFORMATION SUPPORT OF THE DISCIPLINE**

**7.1. Main literature**

**Printed editions**

No.	Editions	Number of copies in the library
one	Biology. In 2 vols. T. 2: textbook. for doctors. specialist. universities / V. N. Yarygin, V. I. Vasilyeva, I. N. Volkov, V. V. Sinelshchikova; edited by V.N. Yarygin. - 3rd publishing house, erased. - Moscow: Higher school, 2003 .-- 352 p. ISBN 5-06-004588-9	720
2	Biology: a guide to laboratory studies: textbook ed. ABOUT. Gigani. - M: publishing house GEOTAR Media, 2012 .-- 272 p. ISBN 978-597-042138-3	thirty

3	Biology: Medical biology, genetics and parasitology: a textbook for medical students, edited by A.P. Pekhov / Moscow: publishing house GEOTAR-Media, 2014.- 656 p. ISBN 978-5-9704-3072-9	one hundred
---	---	-------------

### Electronic publications

1	Biology. Laboratory guidance: textbook. manual / ed. N.V. Chebyshev. - 2nd ed., Rev. and add. - M.: GEOTAR-Media, 2015. <a href="http://www.studmedlib.ru">http://www.studmedlib.ru</a>
2	Biology. In 2 volumes. Vol. 2: textbook / ed. V.N. Yarygina. - M.: GEOTAR-Media, 2015 <a href="http://www.studmedlib.ru">http://www.studmedlib.ru</a>
3	Biology: medical biology, genetics and parasitology: textbook for universities / A.P. Pehov. - 3rd ed., Stereotype. - M.: GEOTAR-Media, 2014 <a href="http://www.studmedlib.ru">http://www.studmedlib.ru</a>

### 7.2. additional literature

### Printed editions

№.	Editions	Number of copies in the library
1	Atlas on zooparasitology / (edited by M.V.Dalin . V.K. Gusev.) Moscow, 1998 ISBN 458-18	50
2	Biology: a guide to laboratory studies: textbook ed. ABOUT. Gigani. - M: Publisher: GEOTAR Media, 2012 .-- 272 p. ISBN 978-5-9704-2138-3	50
3	A guide to laboratory exercises in biology and ecology. / ed. Chebysheva N.V., M., Publishing house "Medicine", 2011, 220 p. ISBN 978-5-9704-3411-6	200

### Electronic publications

№	Editions
1	Insects class <a href="https://floranimal.ru/animals/catalog/nasekomye/">https://floranimal.ru/animals/catalog/nasekomye/</a>
2	(Prokaryotes) <a href="http://www.college.ru/biology/course/content/chapter1/section2/paragraph1/theory.html">http://www.college.ru/biology/course/content/chapter1/section2/paragraph1/theory.html</a>
3	(General characteristics of protozoa) <a href="http://www.homeedu.ru/user/00000545/prostejshie/prostejshie.doc">http://www.homeedu.ru/user/00000545/prostejshie/prostejshie.doc</a>
4	(Type Flatworms. Classification) <a href="http://biology.asvu.ru/list.php?c=orgplchervi">http://biology.asvu.ru/list.php?c=orgplchervi</a>
5	(Type Flatworms. General characteristics. Structure) <a href="http://abc-192.mosuzedu.ru/projects/gorbunova/ploskie.html">http://abc-192.mosuzedu.ru/projects/gorbunova/ploskie.html</a>
6	(Type Roundworms. General characteristics. Structure) <a href="http://biology.asvu.ru/page.php?Id=126">http://biology.asvu.ru/page.php?Id=126</a>
7	Biology: a guide to laboratory studies: a textbook / Ed. Gigani O.B. - M.: GEOTAR-Media, 2016 <a href="http://www.studmedlib.ru">http://www.studmedlib.ru</a>
8	Biology. Guide to practical training: a tutorial / Markina V.V., Oborotistov Yu.D., Lisatova N.G. and etc. ; Ed. V.V. Markina - M.: GEOTAR-Media, 2015 <a href="http://www.studmedlib.ru">http://www.studmedlib.ru</a>

### 7.3 Resources of the information and telecommunications network "Internet"

№.	Resource name	Website address
1.	Medicine news	info@univadis.ru
2.	Health issues. Information about WHO	http://www.who.int/en/
3.	Ministry of Education and Science of the Russian Federation	http://minobrnauki.rf
4.	Ministry of Health of the Russian Federation	http://www.rosminzdrav.ru
5.	Ministry of Health of the Republic of Dagestan	http://minzdravrd.ru
6.	Scientific electronic library CyberLeninka	http://cyberleninka.ru
7.	Electronic scientific library	https://elibrary.ru/defaultx.asp
8.	Federal Electronic Medical Library (FEMB)	http://feml.scsm1.rssi.ru
9.	Univadis®: An international education and information portal that helps physicians around the world stay at the forefront of their specialties.	http://www.medlinks.ru/
10.	Medical search engine	http://www.medinfo.ru/
11.	Department page address.	https://dgm.ru/kafedry-2/
12.	Faculty of Fundamental Medicine, Moscow State University M.V. Lomonosov (publications).	http://www.fbm.msu.ru/sci/publications/
13.	Electronic library RFBR.	http://www.rfbr.ru/
14.	Electronic library of textbooks.	http://studentam.net
15.	Portal textbooks - free RF.	http://tutorials-free.rf/http://sci-book.com/

### 7.4. Information Technology

List of software (Win HOME 10 Russian OLP (Sublicense agreement Tr000044429 dated 12/08/18); Kaspersky Edition Security for Business - Standard Russian Edition. 100-149 Node (License agreement No. 1081-2015 dated 10/14/2018); Office ProPlus 2013 RUS OLP NL Acdmc (agreement No. ДП-026 dated 16.10.18), etc.) Program for working with archives "7zip"; Z Program for working with documents in .pdf format "Adobe reader"; Program for playing audio and video files "VLC media player"

#### *List of information reference systems:*

1. **Electronic information and educational environment (EIOS) DSMU**. URL: <https://eos-dgm.ru>
2. **Student advisor: electronic library system**. URL: <http://www.studentlibrary.ru>
3. **Federal electronic medical library (FEML)**. URL: <http://feml.scsm1.rssi.ru>
4. **Scientific electronic library eLibrary**. URL: <https://elibrary.ru/defaultx.asp>
5. **Medical informational reference system**. URL: <http://www.medinfo.ru/>
6. **Scientific electronic library**. URL: <http://cyberleninka.ru>
7. **Electronic library RFBR**. URL: <http://www.rfbr.ru/>

## VIII. MATERIAL AND TECHNICAL SUPPORT OF THE DISCIPLINE

N P/ P	Room type with number	Equipment identification
1	Office of the head of the department - 2 rooms -36.0 m <sup>2</sup> St. Shamil 48, educational and laboratory building, 3rd floor.	1 personal computers - 2 pcs; 2 printer "Canon", "HP" - 1 piece; 3 refrigerator - 1 pc.
2	Classroom No. 1 - 40 m <sup>2</sup> for practical training for 50 seats St. Shamil 48, educational and laboratory building, 3rd floor.	Portable multimedia equipment, laptop, projector; blackboard, classroom furniture, teacher's table - 1, hanger - 1pc., clock - 1pc.); microscopes, micro-, macropreparations
3	Classroom № 5 - 30 m <sup>2</sup> for practical training St. Shamil 48, educational and laboratory building, 3rd floor.	Portable multimedia equipment, laptop, projector; blackboard, classroom furniture, teacher's table - 1, hanger - 1pc., clock - 1pc.); microscopes, micro-, macropreparations
4	Reading rooms - for independent work. st. A.Aliyeva 1, biological building, 1st floor, scientific library of the DSMU.	Tables, chairs, computers for working with electronic resources of the library, educational, scientific, periodical literature.

## XI. FEATURES OF THE ORGANIZATION OF TRAINING ON THE DISCIPLINE FOR THE DISABLED AND PERSONS WITH DISABILITIES

### 11.1. Training of people with disabilities and people with disabilities

If necessary, it is carried out by the department on the basis of an adapted work program using special teaching methods and didactic materials, compiled taking into account the characteristics of psychophysical development, individual capabilities and the state of health of such students (student).

**Mastering the curriculum of the discipline by disabled people and persons with disabilities**, the department provides:

- 1) for people with disabilities and people with visual impairments:
  - placement in accessible for students who are blind or visually impaired, places and in an adapted form of reference information on the schedule of training sessions;
  - the presence of an assistant who provides the student with the necessary assistance;
  - release of alternative formats of teaching materials (large print or audio files);
- 2) for people with disabilities and people with hearing disabilities:
  - reproduction of information by appropriate sound means;

3) for disabled people and persons with disabilities with disorders of the musculoskeletal system:

- the possibility of unimpeded access of students to classrooms, toilet rooms and other premises of the department. In case of impossibility of unimpeded access to the department, organize the educational process in a specially equipped center for individual and collective use of special technical training aids for the disabled and persons with disabilities (A.Aliyev st. 1, biological building, 1st floor of the DSMU).

**11.3. Education of students with disabilities** can be organized both together with other students, and in separate groups.

**11.4. The list of educational and methodological support for independent work of students in the discipline.**

Educational and methodological materials for independent work of students from among the disabled and persons with disabilities are provided in forms adapted to the limitations of their health and perception of information:

Categories of students	Forms
hearing impairment	- in printed form; - in the form of an electronic document;
Visually impaired	- in printed form in enlarged font; - in the form of an electronic document; - in the form of an audio file;
With a violation of the musculoskeletal system	- in printed form; - in the form of an electronic document;

This list can be specified depending on the contingent of students.

**11.5. Fund of assessment tools for intermediate certification of students in the discipline.**

11.5.1. The list of funds of appraisal means, correlated with the planned results of the development of the educational program.

For students with disabilities

Categories of students	Types of appraisal tools	Forms of control and assessment of learning outcomes
Hearing impaired	test	predominantly written verification
Visually impaired	interview	predominantly oral check (individually)
With a violation of the musculoskeletal system	solution of distance tests, control questions	organization of control in EIOS DSMU, written verification

Students with disabled persons and persons with disabilities have more time to prepare answers for the test, they are allowed to prepare for the test using distance learning technologies.

11.5.2. Methodological materials defining procedures for assessing knowledge, skills, skills and (or) experience of activities, characterizing the stages of the formation of competencies.

When carrying out the procedure for assessing the learning outcomes of disabled people and people with disabilities, the use of technical means necessary for them in connection with their individual characteristics is envisaged.



The procedure for assessing the learning outcomes of persons with disabilities and persons with disabilities by discipline provides for the provision of information in forms adapted to the limitations of their health and perception of information:

For persons with visual impairments:

- in printed form in enlarged font;
- in the form of an electronic document;
- in the form of an audio file.

For the hearing impaired:

- in printed form;
- in the form of an electronic document.

For persons with musculoskeletal disorders:

- in printed form;
- in the form of an electronic document;
- in the form of an audio file.

This list can be specified depending on the contingent of students.

When carrying out the procedure for assessing the learning outcomes of disabled people and people with disabilities by discipline (module), the following additional requirements are met, depending on the individual characteristics of students:

1. instruction on the procedure for conducting the assessment procedure is provided in an accessible form (orally, in writing, orally using the services of a sign language interpreter);

2. an accessible form for providing assignments of assessment tools (in printed form, in printed form in an enlarged font, in the form of an electronic document, assignments are read by an assistant, assignments are provided using sign language translation);

3. an accessible form of providing answers to tasks (in writing on paper, typing answers on a computer, using the services of an assistant, orally).

If necessary, for students with disabilities and the disabled, the procedure for assessing learning outcomes in a discipline (module) can be carried out in several stages.

The procedure for assessing the learning outcomes of persons with disabilities and persons with disabilities is allowed using distance learning technologies.

#### **11.6. The list of basic and additional educational literature necessary for mastering the discipline.**

For the development of the discipline by disabled people and persons with disabilities, basic and additional educational literature is provided in the form of an electronic document in the library fund and / or in electronic library systems. And also free special textbooks and teaching aids, other educational literature and special technical training aids for collective and individual use, as well as the services of sign language interpreters and tiflosurd interpreters are provided.

#### **11.7. Methodical instructions for students on mastering the discipline**

Individual work is of great importance in mastering the discipline by disabled people and persons with disabilities. Individual work means two forms of interaction with the teacher: individual educational work (consultation), i.e. additional explanation of the educational material and in-depth study of the material with those students who are interested in this, and individual educational work. Individual counseling on a subject is an important factor in promoting individualization of teaching and the establishment of educational contact between a teacher and a student with a disability or student with a disability.

**11.8. Description of the material and technical base necessary for the implementation of the educational process in the discipline**

The development of discipline by disabled people and persons with disabilities is carried out using general and special-purpose teaching aids:

- lecture hall - multimedia equipment, mobile radio class (for students with hearing impairments); power supplies for individual technical equipment;
- classroom for practical classes (seminars) multimedia equipment, mobile radio class (for students with hearing impairments);
- classroom for independent work - standard workplaces with personal computers; a workstation with a personal computer, with a screen reader, a screen magnifier and a braille display for students with visual impairments.

In each classroom where disabled people and persons with disabilities are trained, there must be an appropriate number of places for students, taking into account the limitations of their health.

**X. CHANGE SHEET**

<b>List of additions and changes made to the work program of the discipline</b>	<b>RP updated at a meeting of the department</b>		
	<b>date</b>	<b>The number of the minutes of the meeting of the department</b>	<b>Signature of the head of the department</b>
The following changes are made to the work program one. ....; 2 ..... etc.  or a note is made about the inexpediency of making any changes for this academic year			