

**Ministry of Health of the Russian Federation  
Federal State Budgetary Educational Institution  
higher education  
"DAGESTAN STATE MEDICAL UNIVERSITY"**

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

**ANNOTATION  
TO THE WORKING PROGRAM OF THE DISCIPLINE  
"BIOLOGY"**

Discipline index: - **B 1.O.14**

Specialty: **31.05.01 "General Medicine"**

Higher education level: **Specialty**

Graduate qualification: **Medical doctor**

faculty: **medical**

Department: **Medical Biology**

Form of study: **full-time**

Course: **1**

Semester: **I-II**

Total labor intensity (in credit units / hours): **5 cu . / 180 hours**

Lectures: **34 h.**

Practical lessons: **70 h.**

Independent work: **40 h.**

Control form: exam (**36 hours**).

**PURPOSE AND OBJECTIVES OF LEARNING THE DISCIPLINE**

**The goal of mastering the discipline** is the formation of fundamental systemic knowledge, abilities and skills according to general biological laws that are of greatest interest for practical health care; preparation of students for the systemic perception of general medical, social and clinical disciplines, the formation of their natural scientific outlook and the logic of biological thinking, necessary for the subsequent practical activities of a doctor, as well as the principles of medical and biological counseling , treatment and prevention of hereditary and parasitic human diseases.

**Objectives of mastering the discipline:**

- Master the knowledge in the field of organization and functioning of living systems and the general properties of living things; general patterns of transmission and changes in hereditary traits and properties in generations, their role in hereditary human pathology; patterns of the process of embryogenesis, including human embryonic development; developmental biology and medical significance of human parasites; general laws of the evolution of living systems, the main directions of the evolution of systems and organs; general patterns of development

of the biosphere and the role of man as a creative ecological factor at different stages of anthropogenesis;

- Master the methods of microscopy; methods for the preparation of temporary micropreparations for the analysis of the structure and identification of cells, phases of division (mitosis, meiosis), embryonic stages of development of vertebrates; principles of organizing medical genetic counseling; methods for identifying causative agents of parasitic diseases;

- To be able to apply the laws of inheritance to determine the likelihood of the appearance of normal and pathological signs in the genotype and their manifestation in the phenotype, to predict the likelihood of developing hereditary diseases in humans using examples of solving genetic problems;

- To acquire knowledge on carrying out diagnostic and preventive measures aimed at preventing the occurrence of parasitic diseases;

- To teach students the ability to substantiate general patterns, directions and factors of evolution to explain the adaptive nature of the evolutionary process; patterns of population ecology, the processes of development and functioning of ecosystems and the biosphere as a whole for planning the strategy of human existence in the biosphere, as well as for organizing preventive measures and medical care for the population;

- To develop skills in working with educational, scientific literature, official statistical reviews and conducting scientific research;

- To form the skills of experimental work;

- To develop communication skills in a team.

## II. EXPECTED DISCIPLINE LEARNING OUTCOMES

Competencies formed in the process of studying the academic discipline:

competence code and name	Competency indicator code and name
<b>General professional competencies</b>	
<b>OPK-5-</b> is able to assess morphofunctional , physiological conditions and pathological processes in the human body to solve professional problems.	<b>ID- 1 OPK 5-</b> evaluates morpho- functional physiological processes

**Know:** Basic biomedical terminology.

The biological essence of the processes occurring in a living organism. Cell structure in interaction with their function; patterns of heredity and variability in individual development as the basis for understanding the pathogenesis and etiology of hereditary and multifactorial diseases; laws of genetics, and its importance for medicine, the phenomenon of parasitism and bioecological diseases; human anthropogenesis and ontogenesis; foundations of ecology and adaptive types of humanity.

**Be able to:** use educational, scientific, popular science literature, the Internet for professional activities.

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

The academic discipline "Biology" belongs to the block - B 1. O .14 of the basic part of the compulsory disciplines of the curriculum in the specialty 05/31/01 "General Medicine".

Education of biology students at DSMU is carried out on the basis of the continuity of knowledge, skills and competencies obtained in the course of biology of general educational institutions, as well as knowledge of chemistry, human anatomy and other disciplines:

#### **1. History of the Fatherland:**

*Knowledge:* basic patterns and trends in the development of the world historical process; the most important milestones in the history of Russia, the place and role of Russia in the history of mankind and in the modern world.

*Skills:* analyze and assess the social situation in Russia, as well as abroad.

#### **2. Chemistry:**

*Knowledge:* chemical elements, molecules, cations, anions, chemical bonds; principles of construction of inorganic and organic molecules; features of the formation of chemical bonds; physical and chemical properties of inorganic and organic substances and their biological significance.

*Skills:* comparison of the structural features of chemical substances with their physicochemical and biological properties; comparison of the structural features of chemical substances with their reactivity and the conditions for the occurrence of chemical reactions.

*Skills:* composing fusion and decay reactions; drawing up chemical equations and determining the end products of chemical reactions; solving chemical problems to determine the quantitative and qualitative parameters of chemical reactions.

#### **3. Histology, cytology, embryology:**

*Knowledge:* basic patterns of development and life of the human body based on the structural organization of cells, tissues and organs; histofunctional features of tissue elements; methods of their research.

*Skills:* use laboratory equipment; work with a magnifying technique; analyze the histological state of various cellular, tissue and organ structures of a person.

*Skills:* possess a medical-functional conceptual apparatus.

#### **4. Human anatomy:**

*Knowledge:* tissues, organs and systems of the human body.

*Skills:* explain the composition, structure and functioning of the systems of the human body.

*Skills:* working with dummies of organ systems and the human skeleton.

**4. Labor input of the EDUCATIONAL DISCIPLINE** is 5 credit units, 180 academic hours.

Lectures - 34 hours

Practical classes - 70 hours.

Independent work - 40 hours.

#### **5. SECTIONS OF THE EDUCATIONAL DISCIPLINE AND COMPETENCES THAT SHOULD BE MASTERED WHEN STUDYING THEM**

No.	Name of the discipline section
one	<b>Introduction. General characteristics of life.</b>
2	<b>Fundamentals of General and Medical Genetics.</b>
3	<b>Developmental biology. Homeostasis. Regeneration.</b>
4	<b>Environmental and biomedical basics of parasitism.</b>
5	<b>Phylogenesis of systems organs. Evolution organic the world.</b>
6	<b>Fundamentals of Ecology. Human ecology.</b>

#### **6. FORM OF INTERIM CERTIFICATION.**

Exam - at the 2nd semester

**Department-developer: Department of Medical Biology**