

Abstract of the working program of the discipline  
**"Microbiology, virology, immunology"**  
(31.05.01 Medicine)

The main professional educational program of higher education is the specialty program in the specialty 31.05.01 Medicine, approved on 25.12.2020.

Form of study: full-time

The period of development of BPEP HE: 6 years

Department: Microbiology.

1. The purpose of discipline: mastering the discipline of microbiology, virology, immunology;
2. The place of discipline in the structure of Basic Professional Educational Program of Higher Education: the discipline of microbiology applies to the basic part of Block 1 of the Federal State Educational Standards of Higher Education;
3. Requirements to results of mastering the discipline:  
The process of studying the discipline is directed to formation and development of competencies:  
General Competencies-5; General Professional Competences-1; Professional Competences-1.

As a result of studying discipline the student should **know**:

Structure of the microbiological laboratory and rules of work in it;  
Principles of classification of microorganisms;  
Features of the structure and life activity;  
Methods of isolation of pure cultures of aerobic and anaerobic bacteria;  
Methods of virus cultivation;  
Fundamentals of microbial genetics;  
Essence biotechnology, concepts and principles of genetic engineering, drugs, obtained by genetic engineering methods;  
The composition of the microflora of the human body and its value;  
Sanitary-epidemiology microorganisms, water, air, soil and their importance for the evaluation of the sanitary condition of the environment;  
The influence of environmental factors on microorganisms, goals and methods of asepsis, antisepsis, preservation, sterilization, disinfection;  
Equipment and quality control of sterilization;  
The concept of chemotherapy and antibiotics;  
Classification of antibiotics by source, methods of preparation, chemical structure, spectrum, mechanism and type of action;  
Methods for determining the activity of antibiotics and the sensitivity of microbes to antibiotics;  
Fundamentals of the doctrine of "infection", "infectious disease";  
The types of infection;  
The role of microbes in the development of infectious process;  
Mechanisms and ways of transmission of exciter;  
The concept of "immunity" as immunity to infectious diseases;  
The types of infectious immunity;  
Nonspecific and specific defense factors in bacterial and viral infections;  
Allergies and allergens;  
The mechanism of the main immune responses used for the diagnosis of infectious diseases;  
Diagnostic drugs;  
Immunobiological preparations for the prevention and treatment of infectious diseases and their classification..

**To be able to:**

Perform work under aseptic conditions, disinfect and sterilize laboratory utensils, tools, workplace, etc.;  
Prepare and color micro-preparations using simple methods and the gram method;  
Microscopy with an immersion system;

Isolate a clean culture of microorganisms (make crops, identify clean culture);

- Examine environmental objects, washes from hands and dishes according to microbiological purity indicators;
- Give explanations on the use of Immunobiological drugs;
- Determine the sensitivity of bacteria to antibiotics;
- Evaluate the results of some immune responses.

**To possess:**

Light microscope technique and preparing a temporary microscopic slide;  
The methods of solving the problems on Cytology.  
The methods of solving problems on Genetics.  
The methods of studying human heredity(cytogenetic method, genealogical method, twins method)  
The microscopy skills, ovohelminthoscopy.

4. The total complexity of the discipline Total complexity of the discipline is 8 credits. 288 hours

5. Semester: 4, 5

6. The main sections of the discipline:

- 1.Generalmicrobiology
- 2.Ecology of microorganisms
3. Genetics of microorganisms
4. General virology
5. The doctrine of infection
6. Medical immunology
7. Private microbiology
8. Private virology
9. Clinical microbiology

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