ANNOTATION

work program of the discipline “microbiology, virology”

Speciality	05/31/01 General medicine
Number of credits	In accordance with the RUP
Interim certification form	Test/exam

1. The purpose of studying the discipline.

Mastering knowledge about the patterns of interaction between micro- and macroorganisms, as well as the principles of microbiological, molecular biological and immunological diagnostic methods, the main directions of treatment and prevention of infectious and opportunistic diseases.

2. Brief content of the discipline.

1. General medical microbiology.

Morphology of microbes. Basic characteristics of a prokaryotic cell. Microscopic method. Gram and Ziehl-Neelsen staining of bacteria, mechanism, practical use. Physiology of microbes. Characteristics of growth and reproduction processes in bacteria. Characteristics of the bacteriological research method. Methods for identifying pure culture.

2. Ecology of microbes (microecology).

Distribution of microbes in the environment. Microflora of soil, water, air, humans. Destruction of microbes. Disinfection and sterilization. Asepsis and antiseptics. Physical and chemical factors of decontamination.

3. Genetics of bacteria.

Structure of the bacterial genome. The role of plasmids in the life of bacteria. Phenotypic and genotypic variability. Bacteriophage. Practical significance of phages in biology and medicine. Molecular biological diagnostic methods.

4. General virology.

Concept of a virus. Features of the organization of viruses. Reproduction of DNA and RNA containing viruses. Viroids and prions, their role in pathology.

5. Symbiosis of man and microbes.

Microflora of the human body. Concepts of ecological niche, biotope. Concepts about eubiosis and dysbiosis. Probiotics, prebiotics, symbiotics. The doctrine of biofilms and the mechanisms of their formation.

6. The doctrine of infection and anti-infective immunity. Immunological bases of diagnosis, treatment and prevention of infectious diseases.

The doctrine of infectious diseasesprocess. Types of infectious process by basic mechanisms. Routes of transmission of infectious diseases. The concept of pathogenicity and virulence. Nonspecific factors of protection of the human body. Cellular and humoral factors, complement. Phagocytosis. Antigens, antibodies. The body's immune system.

Immunodiagnostic reactions. Infectious allergy. Anaphylactic shock. Desensitization for anaphylaxis. Immunoprophylaxis, immunotherapy.

7. Private medical microbiology.

Gram-positive and gram-negative cocci (staphylo-, strepto-, peptococci, Neisseria). Gram-negative facultative anaerobic and aerobic bacilli (enterobacteriaceae, hemophilus, brucella, vibrio). Gram-negative obligate anaerobic rods (bacteroides, fusobacteria). Gram-positive spore-forming rods (clostridia, bacilli). Gram-positive regular (lactobacteria) and irregularly shaped rods (corynebacteria, mycobacteria, propionibacteria, bifidobacteria, eubacteria). Spirochetes and other spiral bacteria. Rickettsia. Chlamydia. Mycoplasmas.

8. Private medical virology.

DNA genomic viruses (smallpox, herpes, hepatitis B). RNA genomic viruses (influenza, rabies, HIV). Oncogenic viruses (the role of herpes, papilloma, retroviruses, hepatitis B, C viruses in carcinogenesis). Viruses and prions are causative agents of slow infections.

9. Clinical microbiology.

Normal (resident and facultative) microflora of the human body. The main biotopes of the human body and the composition of the microflora. Concepts of nosocomial and opportunistic infections. Diagnosis of opportunistic diseases and dysbiosis. Features of prevention and treatment.