

**Thematic lesson plan of seminary type
in the discipline "Microbiology, Virology"
for students entered 2023
according to the educational program
05.31.01 General medicine,
profile General Medicine
(specialty),
Full-time form of education
2024-2025 academic year.**

№	Тематические блоки	Часы (академ.)
1 semester		
1.	Introduction in a course of General Microbiology. Problems, objectives, tasks, methods. Equipment and work in a bacteriological laboratory. Mode and rules of working. Morphology of microorganisms. ¹	2
2.	Bacterial ultrastructure. Study of morphology of bacteria. Complex staining methods. Microscopic method for study of microorganisms. ¹	2
3.	Prokaryote and eukaryote: common properties and differences. Morphology of fungi, actinomyces, spirochetes, rickettsias, chlamydiae, mycoplasmas. Classification. Methods of their studies. ¹	2
4.	Physiology of microorganisms: nutrition and respiration of microbes. The main types of nutrition and respiration. Microbial growth and multiplication. Classification of culture media, their composition. Bacteriological method for study of microorganisms. ¹	2
5.	Enzymes of the microorganisms. Biochemical identification of microorganisms. Bacteriological method for study of microorganisms. ¹	2
6.	Morphology and physiology of viruses. Classification. Methods of their studies. ¹	2
7.	Concluding session: «Morphology and physiology of microorganisms. General virology». ¹	2
8.	Genetics of microorganisms. Organization of genetic material in bacteria. Genetic variability of microorganisms. Molecular genetic method of research. ¹	2
9.	Sanitary microbiology. Microflora of water, air, soil. Sanitary-indicative microorganisms. Microflora of food products. Normal microbiota of the human body, its significance. Formation of the microbiota. Dysbacteriosis, conditions of development, prevention. ¹	2

10.	The effect of environmental factors on microorganisms. Influence of physical and chemical factors. Sterilization and disinfection. Aseptic and antiseptic. ¹	2
11.	Action of biological factors on microorganisms. Chemotherapeutic agents, mechanisms of their action. Antibiotics: classification, mechanism of action. Determination of sensitivity to antibiotics. Complications of antibiotic therapy and their prevention. ¹	2
12.	Concluding session: «Genetics of microorganisms. Ecology of microorganisms and sanitary microbiology. Influence of environmental factors on microorganisms. Asepsis, antiseptics, disinfection, sterilization. The doctrine of antibiotics» ¹	2
13.	The doctrine of infection. Forms of infection, conditions for the development of the infectious process. Pathogenicity, virulence. Characterization of bacterial toxins. Biological research method. ¹	2
14.	The doctrine of immunity. Types and forms of immunity. innate immunity. Factors and mechanisms of non-specific anti-infective defense of the body (anatomico-physiological mechanisms, humoral and cellular factors). ¹	2
15.	Adaptive immunity. The human immune system. Antigens. Antibodies. Antigens of microorganisms and viruses. Interaction of antigens with antibodies. Serological research method. ¹	2
16.	Seroidentification and serodiagnosis of infectious diseases. Serological research method (continued). Immunobiological preparations: vaccines, sera. Preparation and appointment. Concluding session: «The doctrine of infection. The doctrine of immunity» ¹	2
2 semester		
1.	Introduction to particular medical microbiology. Methods for diagnosing infectious diseases. General characteristics of acute intestinal infections and pathogens of bacterial intestinal infections. ¹	2
2.	Causative agents of escherichiosis - taxonomy, morphology, cultivation, biochemical properties, antigenic structure, pathogenicity factors, epidemiology and pathogenesis of diseases, diagnostic methods, specific and non-specific therapy and prevention. ¹	2
3.	Salmonella typhoid and paratyphoid A and B and pathogens of salmonellosis. Shigella, the causative agent of dysentery. Taxonomy, morphology, cultivation, biochemical properties, antigenic structure, pathogenicity factors of pathogens,	2

	epidemiology and pathogenesis of diseases, diagnostic methods, specific and nonspecific therapy and prevention. ¹	
4.	Microorganisms that cause cholera. Taxonomy, morphology, cultivation, biochemical properties, antigenic structure, pathogenicity factors, epidemiology and pathogenesis of diseases, diagnostic methods, specific and nonspecific therapy and prevention. ¹	2
5.	Concluding session: «Causative agents of acute intestinal infections»¹	2
6.	Pathogenic gram-positive cocci - staphylococci, streptococci, pneumococci. Taxonomy, morphology, cultivation, biochemical properties, antigenic structure, pathogenicity factors, epidemiology and pathogenesis of diseases, diagnostic methods, specific and nonspecific therapy and prevention. ¹	2
7.	Pathogenic gram-negative cocci are meningococci and gonococci. Taxonomy, morphology, cultivation, biochemical properties, antigenic structure, pathogenicity factors, epidemiology and pathogenesis of diseases, diagnostic methods, specific and nonspecific therapy and prevention. ¹	2
8.	Causative agents of bacterial airborne infections. The causative agents of diphtheria and whooping cough. Corynebacteria and Bordetella - taxonomy, morphology, cultivation, biochemical properties, antigenic structure, pathogenicity factors, epidemiology and pathogenesis of diseases, diagnostic methods, specific and nonspecific therapy and prevention. ¹	2
9.	Causative agents of anaerobic infections: tetanus, botulism, gas gangrene. Clostridia - taxonomy, morphology, cultivation, biochemical properties, antigenic structure, pathogenicity factors, epidemiology and pathogenesis of diseases, diagnostic methods, specific and non-specific therapy and prevention. ¹	2
10.	Pathogenic mycobacteria. The causative agents of tuberculosis and leprosy - taxonomy, morphology, cultivation, biochemical properties, antigenic structure, pathogenicity factors, epidemiology and pathogenesis of diseases, diagnostic methods, specific and nonspecific therapy and prevention. ¹	2
11.	Concluding session: «Pathogenic cocci. Microorganisms, causative agents of airborne infections. Pathogenic anaerobes»¹	2
12.	Highly dangerous zoonoanthropozal infections: causative agents of plague, anthrax - taxonomy, morphology,	2

	cultivation, biochemical properties, antigenic structure, pathogenicity factors, epidemiology and pathogenesis of diseases, diagnostic methods, specific and nonspecific therapy and prevention. ¹	
13.	Highly dangerous zoonothroponozal infections: causative agents of tularemia and brucellosis - taxonomy, morphology, cultivation, biochemical properties, antigenic structure, pathogenicity factors, epidemiology and pathogenesis of diseases, diagnostic methods, specific and nonspecific therapy and prevention. Testing on the topics covered: "Pathogens of especially dangerous zoonotic infections" ¹	2
14.	Microorganisms, pathogens of spirochetosis: syphilis, leptospirosis, borreliosis. <i>Leptospira</i> , <i>Borrelia</i> , <i>Treponema</i> - taxonomy, morphology, cultivation, biochemical properties, antigenic structure, pathogenicity factors, epidemiology and pathogenesis of diseases, diagnostic methods, specific and nonspecific therapy and prevention. Testing on the topic covered: "Microorganisms, causative agents of spirochetosis" ¹	2
15.	Viruses are the causative agents of human infectious diseases. Virological research method. The causative agents of acute respiratory viral infections (ARVI). Viruses, pathogens of influenza, parainfluenza, respiratory sentient virus, coronaviruses, adenoviruses. Taxonomy, morphology, cultivation, antigenic structure, epidemiology and pathogenesis of diseases, diagnostic methods, specific and nonspecific therapy and prevention. ¹	2
16.	The causative agents of acute respiratory viral infections (ARVI) (cont.). Measles, rubella, mumps viruses – taxonomy, morphology, cultivation, antigenic structure, epidemiology and pathogenesis of diseases, diagnostic methods, specific and nonspecific therapy and prevention. <i>Herpesviridae</i> family. Taxonomy, morphology, cultivation, antigenic structure, epidemiology and pathogenesis of diseases, diagnostic methods, specific and nonspecific therapy and prevention. ¹	2
17.	Neuroviruses, causative agents of poliomyelitis, tick-borne encephalitis and rabies. Taxonomy, morphology, cultivation, antigenic structure of pathogens, epidemiology and pathogenesis of diseases, diagnostic methods, specific and nonspecific therapy and prevention. Viruses, causative agents of enterovirus infections: Coxsackie and ECHO viruses. ¹	2
18.	Viruses, causative agents of viral hepatitis. Taxonomy, morphology, cultivation, antigenic structure, epidemiology	2

	and pathogenesis of diseases, diagnostic methods, specific and nonspecific therapy and prevention. ¹	
19.	Oncogenic viruses. Viruses, causative agents of HIV infection. Taxonomy, morphology, cultivation, antigenic structure of pathogens, epidemiology and pathogenesis of diseases, diagnostic methods, specific and nonspecific therapy and prevention. ¹	2
20.	Concluding session: «Particular virology»	2
	Промежуточная аттестация	экзамен
	Итого	72

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Заведующий кафедрой



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