

**Thematic lesson plan of seminar type
in the discipline "Microbiology, Virology -
microbiology of the oral cavity"
for students majoring in Dentistry
for the 2024-2025 academic year**

№	Thematic blocks	Hours (academic)
1.	Microbiological laboratories, their equipment. ¹ Safety rules when working with gas, live microorganisms. Morphology of bacteria. Microscopic examination method. Simple coloring methods. The main forms of bacteria living in the oral cavity. ²	2
2.	Ultrastructure and chemical composition of the bacterial cell. ¹ Taxonomy and systematics of microorganisms. Representatives in the oral cavity. Simple and complex painting methods (basic and additional structural elements). ²	2
3.	Morphology and structure of fungi, actinomycetes, spirochaetes, rickettsias, mycoplasmas, chlamydia. ¹ Representatives living in the oral cavity. Methods of their study. Importance in dental pathology. ²	2
4.	Viruses. ¹ Classification and taxonomy, general characteristics. Features of the structure and reproduction. The importance of viruses in the nature and pathology of the oral cavity. ²	2
5.	The physiology of microorganisms. ¹ Nutrition and respiration of bacteria. Nutrient media. Isolation of pure cultures of aerobes and anaerobes. Aerobic and anaerobic microorganisms of plaque. Bacteriological research method, its stages. Bacterial enzymes. The biochemical activity of bacteria, its importance in the identification of microorganisms. ²	2
6.	Colloquium on topics. "Morphology and physiology of microorganisms". Interview on control issues.	2
7.	Genetics of microorganisms. ¹ The organization of genetic material in bacteria. Transduction, transformation and conjugation. Mutations in bacteria. Plasmids, their types and significance. ²	2
8.	Sanitary microbiology. ¹ Microflora of water, air, soil. Sanitary-indicative microorganisms. Determination of the microbial number of air in dental offices. Detection of sanitary-indicative microorganisms in dental clinics. The normal microflora of the human body, its significance. The microflora of the oral cavity is normal and pathological. Dysbiosis, conditions and stages of development, prevention. Examples of oral dysbiosis and its correction. ²	2
9.	The influence of environmental factors on microorganisms. ¹ The effects of physical and chemical factors. Sterilization and disinfection. Asepsis and antiseptics. Importance in dentistry. Sterilization and disinfection methods used in dental clinics. ²	2
10.	The effect of biological factors on microorganisms. ¹ Chemotherapeutic agents, their mechanisms of action. Antibiotics: classification, mechanism of action. The main groups of antibiotics used in dentistry. Determination of the sensitivity of bacteria to antibiotics. ²	2
11.	Colloquium on the topics covered. ¹ Interview on control issues. ²	2
12.	The doctrine of infection. ¹ Forms of infection, conditions for the development of the infectious process in the oral cavity. Pathogenicity	2

	and virulence of microorganisms. Characteristics of bacterial toxins. The biological method of research: its tasks, stages, meaning. ²	
13.	Immunity. ¹ Factors and mechanisms of nonspecific anti-infectious protection of the body. The role of nonspecific resistance factors in the oral cavity. ²	2
14.	Serological research method. ¹ Agglutination and precipitation reactions. Mechanism, ingredients, consideration of results, practical significance. REEF, lysis, hemolysis, bacteriolysis, RIA, IB, ELISA, RSC. Mechanism, ingredients, consideration of results, practical significance. Serological reactions used in the diagnosis of dental pathology. ²	2
15.	Immunotherapy and immunoprophylaxis. Vaccines. ¹ Serum. Classification. Application. Colloquium on the topics covered. ¹ Interview on control issues. ²	2
16	Introduction to private medical microbiology. ¹ Materials and methods of research, their application in dentistry. ²	2
17	Pathogenic cocci. ¹ General characteristics. Staphylococci: microbiological characteristics. Diseases caused by staphylococci. The role of carriage of pathogenic staphylococci in the oral cavity. Microbiological diagnostics, specific prevention and therapy. Streptococci, pneumococci. Biological properties, laboratory diagnostics. The role of streptococci in the development of dental caries and dental pathology. ²	2
18	Gram-negative cocci: gonococci and meningococci. ¹ Representatives of neisseria living in the oral cavity. Microbiological characteristics. Principles of laboratory diagnostics. ²	2
19	Pathogens of airborne infections: diphtheria, whooping cough and paracoccussis. ¹ Microbiological characteristics, etiopathogenesis of diseases, manifestations in the oral cavity. Laboratory diagnostics, specific prevention and therapy. ² Pathogenic mycobacteria: tuberculosis, leprosy. ¹ Biological properties, principles of laboratory diagnostics, specific prevention and therapy. Mycobacteria that live in the oral cavity.	2
20	Colloquium on the topics covered, an interview on the issues. ²	2
21	General characteristics of pathogens of bacterial intestinal infections. ¹ Principles of microbiological diagnostics. Salmonella typhoid and paratyphoid A, B. Salmonella are pathogens of foodborne toxicoinfections. Microbiological characteristics. Etiopathogenesis. Changes manifested in the oral cavity. Principles of laboratory diagnostics. ²	2
22	Pathogens of bacterial dysentery: characteristics of shigella, principles of laboratory diagnosis, treatment and prevention. ¹ Escherichiosis – biological properties of pathogens, etiopathogenesis, microbiological diagnosis. Cholera. ¹ Biological properties of pathogens, etiopathogenesis of the disease. Manifestations in the oral cavity. Microbiological diagnostics, specific prevention and treatment. Representatives of gram-negative bacteria included in the microbiocenosis of the oral cavity. ²	2
23	Colloquium on the topics covered, an interview on the issues. ²	2
24	Zoonanthroponotic infections. ¹ Pathogens of plague, anthrax, brucellosis, tularemia: biological properties, etiopathogenesis of diseases, principles of laboratory diagnosis, specific prevention and therapy. ²	2
25	Pathogens of anaerobic infections. ¹ Tetanus, botulism, gas gangrene. Biological properties, laboratory diagnostics, specific prevention and therapy. The role of anaerobes in the etiopathogenesis of odontogenic	2

	infections. ²	
26	Spirochaetes: syphilis, leptospirosis, recurrent typhus. ¹ Representatives of spirochaetes living in plaque. Microbiological characteristics of pathogens. Manifestations in the oral cavity. Laboratory diagnostics.	2
27	Colloquium on the topics covered, an interview on the issues. ²	2
28	Viruses are pathogens of human infectious diseases. ¹ Virological research method. Pathogens of respiratory viral infections: influenza, parainfluenza, coronaviruses, SARS. Adenoviruses. Herpesviruses. Pathogens of enterovirus infections. Cocksackie and ECHO viruses, polio. Pathogens of viral vector-borne and zoonotic infections. Rabies. Manifestations of viral infections in the oral cavity. ²	2
29	Viruses Viral hepatitis (A, B, C, D, E). ¹ Characteristics of pathogens. Microbiological diagnostics. The risk of infection in the dental office. Measles, rubella, mumps virus. Manifestations in the oral cavity. Characteristics of pathogens. Microbiological diagnostics. Oncogenic viruses, their role in dental pathology. Pathogens of slow viral infections. HIV infection, characteristics of the virus, clinical manifestations in the oral cavity. ²	2
30	Colloquium on the topics covered, an interview on the issues. ²	2
	Total	60

1 – lesson topic

2 – the essential content of the lesson