

**Thematic plan for seminar-type classes
in discipline «Microbiology, virology- Microbiology of the oral cavity»
for students of 2024 year of admission
under the educational programme
31.05.01 Dentistry,
specialisation (profile) Dentistry
(Specialist's),
form of study full-time
for the 2025-2026 academic year**

№	Topic of independent work	Hours (academic)
3rd semester		
1	Microbiological laboratories, their equipment. Safety rules for working with gas, living microorganisms. Morphology of bacteria. Microscopic method of investigation. Simple methods of coloring. The main forms of bacteria that live in the mouth.	2
2	Taxonomy and taxonomy of microorganisms. Representatives in the oral cavity. Ultrastructure and chemical composition of the bacterial cell. Complex methods of coloring (basic and additional structural elements).	2
3	Morphology and structure of fungi, actinomycetes, spirochetes, rickettsia, mycoplasmas, chlamydia. Representatives residing in the oral cavity. Methods of studying them. Significance in dental pathology.	2
4	Physiology of microorganisms. Nutrition and respiration of bacteria. Nutrient media. Isolation of pure cultures of aerobes and anaerobes. Aerobic and anaerobic microorganisms of plaque. Bacteriological method of research, its stages. Enzymes of bacteria. Biochemical activity of bacteria, its importance in the identification of microorganisms.	2
5	Viruses: classification and taxonomy, a general characteristic. Features of structure and reproduction. The importance of viruses in nature and pathology of the oral cavity.	2
6	Colloquium on the topics covered.	2
7	Genetics of microorganisms. Organization of genetic material in bacteria. Transduction, transformation and conjugation. Mutations in bacteria. Plasmids, their types and meaning. Molecular genetic methods for diagnosing infectious diseases.	2
8	Sanitary microbiology. Microflora of water, air, soil. Sanitary-indicative microorganisms. Determination of the microbial number of air in the dental offices. Detection of sanitary-demonstration microorganisms in dental clinics. Normal microbiota of the human body, its importance. The microbiota of the oral cavity is normal and with pathology. Dysbiosis, conditions and stages of development, prevention. Examples of dysbiosis of the oral cavity and its correction.	2
9	Influence of environmental factors on microorganisms. The impact of physical and chemical factors. Sterilization and disinfection. Aseptic and antiseptic. Importance in dentistry. Methods of sterilization and disinfection used in dental clinics.	2
10	The effect of biological factors on microorganisms. Chemotherapeutic agents, mechanisms of their action. Antibiotics: classification, mechanism of action. The main groups of antibiotics used in dentistry. Determination of bacterial sensitivity to antibiotics.	2
11	Colloquium on the topics covered.	2
12	The doctrine of infection. Forms of infection, the conditions for the development of the infectious process in the oral cavity. Pathogenicity and virulence of microorganisms. Characteristics of bacterial toxins. Biological research method: its tasks, stages, significance.	2
13	Immunity. Factors and mechanisms of nonspecific anti-infection protection of the body. The role of nonspecific factors of resistance in the oral cavity.	2
14	Serological method of research. Agglutination, precipitation reactions. Mechanism, ingredients, accounting of results, practical significance. IFT. CFT, immunolysis reactions: hemolysis, bacteriolysis, Radioimmune assay, immune blotting, ELISA. Mechanism, ingredients, accounting of results, practical significance. Serological reactions used in the diagnosis of dental pathology.	2

15	Immunotherapy and immunoprophylaxis. Vaccines. Serum. Classification. Application. Colloquium on the topics covered.	2
4th semester		
1	Introduction to basic Microbiology. Materials and methods of research, their application in dentistry. General characteristics of bacterial intestinal infections. Principles of microbiological diagnostics. Esherihioz – biological properties of causative agents, pathogenesis, microbiological diagnostics. Representatives of gram-negative bacteria within the oral cavity microbiocenosis. Causative agents of bacterial dysentery: Shigella characteristics, principles of laboratory diagnosis, treatment and prevention.	2
2	Salmonella typhoid and paratyphoid A, B. Salmonella-foodborne pathogens. Microbiological characteristic. Etiopathogenesis. Changes in the oral cavity. Principles of laboratory diagnostics. Cholera. Biological properties of causative agents, the pathogenesis of the disease. Manifestations in the oral cavity. Microbiological diagnostics, specific prevention and treatment.	2
3	Colloquium on the topics covered.	2
4	Pathogenic cocci. General characteristic. Staphylococcus aureus: microbiological characteristics. Diseases caused by staphylococci. The role of carrier of pathogenic staphylococci in the oral cavity. Microbiological diagnostics, specific prevention and therapy. Streptococci, pneumococci. Biological properties, their laboratory diagnosis. The role of streptococci in the development of dental caries and dental pathology.	2
5	Gram-negative cocci: gonococci and meningococci. Representatives of Neisseria that live in the mouth. Microbiological characteristic. Principles of laboratory diagnostics.	2
6	Causative agents of respiratory infections: diphtheria, whooping cough. Microbiological characteristics, etiopathogenesis of diseases, manifestations in the oral cavity. Laboratory diagnostics, specific prevention and therapy.	2
7	Pathogenic mycobacteria: tuberculosis, leprosy. Biological properties, principles of laboratory diagnostics, specific prevention and therapy. Mycobacteria living in the oral cavity. Colloquium on the topics covered.	2
8	Zooantroponoznyh infection: the causative agents of plague, anthrax, brucellosis and tularemia: biological properties, pathogenesis of disease manifestations in the oral cavity, microbiological diagnostics, specific prophylaxis and treatment.	2
9	Causative agents of anaerobic infections: tetanus, botulism, gas gangrene. Biological properties, laboratory diagnosis, specific prophylaxis and therapy. The role of anaerobes in the pathogenesis of odontogenic infections.	2
10	A spirochetosis: syphilis, leptospirosis, relapsing fever. Representatives of the spirochetes that live in dental plaque. Microbiological characteristics of pathogens. Manifestations in the oral cavity. Laboratory diagnosis. Colloquium on the topics covered.	2
11	Viruses are the causative agents of human infectious diseases. Virological method of research. Pathogens of respiratory viral infections: influenza, parainfluenza, SARS. Adenoviruses. Herpesviruses. Causative agents of enterovirus infections. Coxsackie virus and echo, polio. The causative agents of viral vector-borne and zoonotic infections. Rabies. Manifestations of viral infections in the oral cavity.	2
12	Viruses are the causative agents of human infectious diseases. Virological method of research. Pathogens of respiratory viral infections: influenza, parainfluenza, SARS. Adenoviruses. Herpesviruses. Causative agents of enterovirus infections. Coxsackie virus and echo, polio. The causative agents of viral vector-borne and zoonotic infections. Rabies. Manifestations of viral infections in the oral cavity.	2
13	Viral hepatitis (A, B, C, D, E). Characteristics of pathogens. Microbiological diagnostics. Danger of infection in the dental office. Measles, rubella, mumps. Manifestations in the oral cavity. Characteristics of pathogens. Microbiological diagnostics. Laboratory diagnostics. Oncogenic viruses, the role in dental pathology. Pathogens of slow viral infections. HIV infection, characteristics of the virus, clinical manifestations in the oral cavity. Colloquium on the topics covered.	2
	Total	56

Considered at the department meeting Microbiology,
protocol of 11 June 2025 r. № 12.

A handwritten signature in blue ink, consisting of stylized, cursive letters that appear to be 'I.S.' followed by a flourish.

Head of the Department

Irina S. Stepanenko