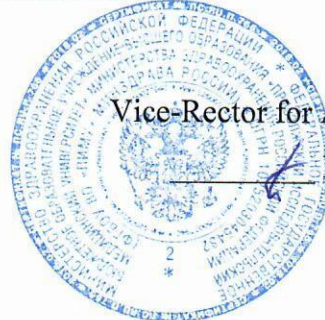


Federal State Budgetary Educational Institution of Higher Education
"Privolzhsky Research Medical University"
Ministry of Health of the Russian Federation



APPROVED

Vice-Rector for Academic Affairs

E.S. Bogomolova

31 August 2021

WORKING PROGRAM

Name of the academic discipline: **MICROBIOLOGY, VIROLOGY –**

MICROBIOLOGY OF THE ORAL CAVITY

Specialty: **31.05.03 DENTISTRY**

Qualification: **DENTIST**

Department: **EPIDEMIOLOGY, MICROBIOLOGY AND EVIDENCE-BASED MEDICINE**

Mode of study: **FULL-TIME**

Labor intensity of the academic discipline: **180 academic hours**

Nizhny Novgorod
2021

The working program has been developed in accordance with the Federal State Educational Standard for the specialty **31.05.03 DENTISTRY** approved by Order of the Ministry of Science and Higher Education of the Russian Federation No. 984 of August 12, 2020.

Developers of the working program:

Makhrova Tatyana Vladimirovna Ph.D. of Medical Sciences, Docent, Associate Professor at the Department of Epidemiology, Microbiology and EBM of FSBEI HE PRMU MOH Russia

The program was reviewed and approved at the department meeting (protocol No. 12, date 15.04.2021)

Head of the Department of Epidemiology,
microbiology and evidence-based medicine,

DSci. of Medical Sciences, Associate Professor



(signature)

(Kovalishena O.V.)

15.04.2021

AGREED

Deputy Head of EMA ph.d. of biology



Lovtsova L.V.

(signature)

22.04.2021

1. The purpose and objectives of mastering the academic discipline "Microbiology, virology – microbiology of the oral cavity" (hereinafter – the discipline):

1.1. The purpose of mastering the discipline: *participation in forming the relevant competencies* UC-1, UC-8, GPC-5, GPC-9, PC-3, PC-6 (mastering by students the theoretical foundations and patterns of interaction of micro- and macroorganism, practical skills in methods of prevention, microbiological, molecular biological and immunological diagnostics, the main directions of treatment of infectious and opportunistic human diseases manifested in the oral cavity).

1.2. Tasks of the discipline:

1. formation of students' knowledge on the main theoretical issues of microbiology and virology;
2. formation of students' general ideas about the structure and functioning of microbes as living systems, their role in ecology and decontamination methods, including the basics of disinfection and sterilization techniques;
3. teaching students the methods of preventive measures to prevent bacterial, fungal and viral diseases;
4. students' study of the etiology and pathogenesis of the most urgent infectious diseases;
5. study of the main directions of treatment of infectious and opportunistic human diseases (bacterial, fungal, parasitic, viral), manifested in the oral cavity and maxillofacial region;
6. formation of students' skills to work with scientific literature;
7. familiarization of students with the principles of the organization of work in the microbiological laboratory, with occupational safety and health measures.

1.3. Requirements to the deliverables of mastering the discipline

As a result of completing the discipline, the student should

Know:

- rules of work and safety in physical, chemical, biological and clinical laboratories, with reagents, devices, animals;
- the chemical-biological essence of the processes occurring in a living organism at the molecular and cellular levels;
- biosphere and ecology the phenomenon of parasitism and bioecological diseases;
- classification, morphology and physiology of microorganisms and viruses, their impact on human health;
- microbiology of the oral cavity;
- methods of microbiological diagnostics; the use of basic antibacterial, antiviral and biological drugs;
- scientific principles of sterilization, disinfection and antiseptic treatment to avoid infection when working in dental practice;

Be able to:

- use laboratory equipment;
- work with magnifying equipment;
- interpret the results of the most common methods of laboratory and functional diagnostics, thermometry to identify pathological processes in the organs and systems of patients;
- to substantiate the nature of the pathological process and its clinical manifestations, the principles of pathogenetic therapy of the most common diseases, in particular dental;

Possess:

- medico-functional conceptual apparatus;
- methods of sterilization, disinfection and antiseptic treatment;
- information on the principles of sterilization, disinfection and antiseptic treatment of instruments and equipment in order to avoid infection of the doctor and patient;

- skills of making a preliminary diagnosis based on the results of laboratory and instrumental examination of patients;

2. Position of the academic discipline in the structure of the General Educational Program of Higher Education (GEP HE) of the organization.

2.1. The discipline "Microbiology, virology – microbiology of the oral cavity" refers to the core part of Block 1 of GEP HE (B1.O.18).

The discipline is taught in 3 and 4 semester II year of study.

2.2. The following knowledge, skills and abilities formed by previous academic disciplines are required for mastering the discipline:

in the cycle of Humanitarian, social and economic disciplines (philosophy, bioethics; history of medicine; Latin; foreign language); in the cycle of Mathematical, natural science and biomedical disciplines (physics, mathematics; computer science, medical informatics and statistics; biological chemistry; biology with ecology; human anatomy, topographic anatomy; histology, embryology, cytology, normal physiology

2.3. Mastering the discipline is required for forming the following knowledge, skills and abilities for subsequent academic disciplines:

infectious diseases, physiology, dermatovenerology, obstetrics and gynecology, faculty and hospital therapy; pediatrics; surgery; traumatology and orthopedics, dentistry, oncology, radiation therapy; ophthalmology.

3. Deliverables of mastering the academic discipline and metrics of competence acquisition

Mastering the discipline aims at acquiring the following universal (UC) or/and general professional (GPC) or/and professional (PC) competencies

№	Competence code	The content of the competence (or its part)	Code and name of the competence acquisition metric	As a result of mastering the discipline, the students should:		
				know	be able to	possess
1.	UC-1	Able to carry out a critical analysis of problem situations based on a systematic approach, develop an action strategy	1.1 Knows: methods of critical analysis and evaluation of modern scientific achievements; basic principles of critical analysis 1.2 Able to: gain new knowledge based on analysis, synthesis, etc.; collect data on complex scientific problems related to the professional field; search for information and solutions based on action, experiment and experience 1.3 Has practical	1.1 Knows: methods of critical analysis and evaluation of modern scientific achievements; basic principles of critical analysis	1.2 Able to: gain new knowledge based on analysis, synthesis, etc.; collect data on complex scientific problems related to the professional field; search for information and solutions based on action, experiment and experience	1.3 Has practical experience: researching the problem of professional activity using analysis, synthesis and other methods of intellectual activity; developing an action strategy to solve professional problems

			<p>experience: researching the problem of professional activity using analysis, synthesis and other methods of intellectual activity; developing an action strategy to solve professional problems</p>			
2.	UC-8	<p>Able to: create and maintain safe living conditions in everyday and professional life for the preservation of the natural environment, ensuring sustainable development of society, including in the case of a threat and occurrence of emergency situations and military conflicts</p>	<p>8.1 Knows: factors of harmful influence on vital activity; algorithms of actions in case of emergencies and military conflicts 8.2 Able to: identify dangerous and harmful factors within the framework of its activities, create and maintain safe living conditions in everyday and professional life 8.3 Has practical experience in: participation in planned exercises to work out the rules of conduct in case of emergencies, first aid; complies with safety regulations at the workplace</p>	<p>8.1 Knows: factors of harmful influence on vital activity; algorithms of actions in case of emergencies and military conflicts</p>	<p>8.2 Able to: identify dangerous and harmful factors within the framework of its activities, create and maintain safe living conditions in everyday and professional life</p>	<p>8.3 Has practical experience in: participation in planned exercises to work out the rules of conduct in case of emergencies, first aid; complies with safety regulations at the workplace</p>
3.	GP C-5	<p>Able to conduct an examination of the patient in order to establish a diagnosis in solving professional problems</p>	<p>5.1 Knows the methodology for collecting anamnesis of life and diseases, complaints from children and adults (their legal representatives); 5.2 Is able to: collect complaints, anamnesis of life and disease in children and adults (their legal representatives), identify risk</p>	<p>method of examination and physical examination; clinical picture, diagnostic methods of the most common diseases; methods of laboratory and instrumental studies for assessing the state of health, medical indications for conducting studies, rules for interpreting their results; international statistical classification of</p>	<p>apply methods of examination and physical examination of children and adults; interpret the results of the examination and physical examination of children and adults; diagnose the most common pathology in children and adults; refer children and adults to</p>	<p>examination and physical examination skills for children and adults; diagnosis of the most common diseases in children and adults; identification of risk factors for major cancers; formulating a preliminary</p>

			<p>factors and causes of diseases; 5.3 Has practical experience in: collecting complaints, anamnesis of life and diseases in children and adults (their legal representatives), identifying risk factors and causes of diseases;</p>	<p>diseases and related health problems (ICD); conditions requiring emergency medical attention - risk factors for the occurrence of infectious diseases; a plan for conducting laboratory, instrumental and additional studies in children and adults in accordance with the procedures for providing medical care, clinical recommendations, taking into account the standards of medical care; - bases of carrying out differential diagnostics of diseases; recognition of conditions arising from sudden acute illnesses, exacerbation of chronic diseases without obvious signs of a threat to the patient's life and requiring emergency medical care - clinical signs of sudden acute diseases, conditions, exacerbations of chronic diseases without obvious signs of a threat to life, requiring emergency medical care</p>	<p>laboratory, instrumental and additional studies in accordance with the current procedures for the provision of dental care, clinical guidelines, taking into account the standards of medical care; refer children and adults for consultations to specialist doctors in accordance with the procedures for providing medical care, clinical recommendations, taking into account the standards of medical care; interpret and analyze the results of consultations by medical specialists for children and adults; interpret and analyze the results of basic (clinical) and additional (laboratory, instrumental) examination methods; conduct differential diagnosis of diseases in children and adults;</p>	<p>diagnosis, drawing up a plan for instrumental, laboratory, additional studies, consultations with specialist doctors; referral of patients for instrumental, laboratory, additional studies, consultations of medical specialists in accordance with the current procedures for the provision of medical care, clinical recommendations, taking into account the standards of medical care; interpretation of data from additional (laboratory and instrumental) examinations of patients; making a preliminary diagnosis in accordance with the international statistical classification of diseases and related health problems (ICD);</p>
4.	GP C-9	<p>GPC-5. Able to assess morphofunctional, physiological conditions and pathological processes in the human body to solve professional problems</p>	<p>5.1 Knows: anatomy, histology, embryology, topographic anatomy, physiology, pathological anatomy and physiology of human organs and systems 5.2 Able to:</p>	<p>- safety regulations and work in physical, chemical, biological laboratories, with reagents, instruments, animals; - pathological anatomy and physiology of human organs and systems, possible pathological processes associated with the vital activity</p>	<p>evaluate the main morphological and functional data, physiological conditions and pathological processes in the human body associated with contamination by pathogenic microorganisms,</p>	<p>assessment of basic morphofunctional data, physiological conditions and pathological processes in the human body when solving professional problems, diagnosis of</p>

			<p>evaluate the basic morphological and functional data, physiological conditions and pathological processes in the human body</p> <p>5.3 Has practical experience in: assessment of basic morphological and functional data, physiological conditions and pathological processes in the human body when solving professional problems</p>	<p>of microorganisms, the effect of enzymes and bacterial toxins on homeostasis - the main disciplines for assessing pathological processes in the human body - the biosphere and ecology, the phenomenon of parasitism and bioecological diseases; classification, morphology and physiology of microorganisms and viruses, their impact on the health of children and adolescents; - the spread of microbes, their impact on human health. Ecology of microorganisms, their role in the cycle of substances. methods of microbiological diagnostics -use of basic antibacterial, antiviral and biological drugs - the nature of the pathological process and its clinical manifestations, the principles of pathogenetic therapy of the most common diseases, in particular dental;</p>	<p>including viruses and fungi; use laboratory equipment; work with magnifying equipment; interpret the results of the most common methods of laboratory and functional diagnostics, thermometry to identify pathological processes in the organs and systems of patients; evaluate the main pathological processes in the human body - carry out sampling, marking and formalizing the direction of biological material from the patient and objects of the environment for microbiological examination; - to interpret the results of the most common methods of laboratory and functional diagnostics;</p>	<p>infectious lesions of the skin and mucous membranes of a person in the process of examining a patient - skills to assess the main pathological processes in the human body - information on the principles of sterilization, disinfection and antiseptic treatment of instruments and equipment in order to avoid infection of the doctor and patient; - the skills of making a preliminary diagnosis based on the results of laboratory and instrumental examinations.</p>
5.	PC-3	<p>ability and readiness to carry out anti-epidemic measures and provide medical assistance in foci of dangerous infections, in case of deterioration of the radiation situation, natural disasters and other emergencies, including participation in copper -qing evacuation.</p>	<p>3.1 Knows: The algorithm for carrying out anti-epidemic measures and providing medical care in foci of dangerous infections, in case of deterioration of the radiation situation, natural disasters and other emergencies, including the procedure for participating in medical</p>	<p>rules of work and safety in physical, chemical, biological and clinical laboratories, with reagents, instruments, animals; the chemical and biological essence of the processes occurring in a living organism at the molecular and cellular levels; the biosphere and ecology, the phenomenon of parasitism and bioecological diseases;</p>	<p>Use personal protective equipment. Comply with the requirements of labor protection, fire safety, emergency procedures. to comply with anti-epidemic measures and provide the necessary medical care in the foci of dangerous infections - to substantiate the choice of material</p>	<p>medical-functional conceptual apparatus; methods of sterilization, disinfection and antiseptic treatment; information on the principles of sterilization, disinfection and antiseptic treatment of instruments and equipment in order to avoid infection of the</p>

			<p>evacuation. IPC 3.2 Able to: comply with anti-epidemic measures and provide the necessary medical care in the centers of dangerous infections, including taking part in medical evacuation. IPC 3.3 Has practical experience: compliance with anti-epidemic measures and the provision of necessary medical care in the centers of dangerous infections.</p>	<p>classification, morphology and physiology of microorganisms and viruses, their impact on human health; Rules for the use of personal protective equipment. Requirements for labor protection, fire safety, emergency procedures. scientific principles of sterilization, disinfection and antiseptic treatment to avoid infection when working in a dental practice;</p>	<p>for research from the microbiological point of view when diagnosing infectious diseases; - use physical, chemical and biological equipment; - work with magnifying equipment (microscopes, optical and simple magnifiers);</p>	<p>doctor and patient; the skills of making a preliminary diagnosis based on the results of laboratory and instrumental examination of patients. The use of personal protective equipment. Compliance with the requirements of labor protection, fire safety, emergency procedures.</p>
6.	PC-6	<p>readiness to collect, analyze complaints and other information from the patient (relatives/legal representatives), data from his anamnesis, interpretation of examination results, laboratory, instrumental, pathological-anatomical and other studies in order to recognize the state or establish the fact of the presence or absence of a dental disease, symptoms, syndromes of dental diseases, the establishment of nosological forms in accordance with the International statistical classification of diseases and health-related problems and other regulatory documents of the Ministry of Health of the</p>	<p>6.1 Knows: The methodology for collecting complaints and anamnesis from patients (their legal representatives). The procedure for providing medical care to children with dental diseases 6.2. Able to: interpret the results of the examination, laboratory, instrumental, pathoanatomical and other studies in order to recognize the condition or establish the presence or absence of a dental disease, symptoms, syndromes of dental diseases, the establishment of nosological forms in accordance with the International Statistical Classification of Diseases 6.3 Has practical</p>	<p>Methods of physical examination of patients (examination, palpation, percussion, auscultation). The procedure for providing medical care to the adult population in case of dental diseases rules of work and safety precautions in physical, chemical, biological and clinical laboratories, with reagents, instruments, animals; the chemical and biological essence of the processes occurring in a living organism at the molecular and cellular levels; the biosphere and ecology, the phenomenon of parasitism and bioecological diseases; - classification, morphology and physiology of microorganisms and viruses, their impact on human health; - microbiology of the oral cavity; methods of microbiological</p>	<p>use laboratory equipment; work with magnifying equipment; interpret the results of the most common methods of laboratory and functional diagnostics, thermometry to identify pathological processes in the organs and systems of patients; to substantiate the nature of the pathological process and its clinical manifestations, the principles of pathogenetic therapy of the most common diseases, in particular dental ones; Develop a plan for the treatment of children and adults with dental diseases in accordance with the procedures for the provision of medical care, clinical</p>	<p>medical-functional conceptual apparatus; methods of sterilization, disinfection and antiseptic treatment; information on the principles of sterilization, disinfection and antiseptic treatment of instruments and equipment in order to avoid infection of the doctor and patient; the skills of making a preliminary diagnosis based on the results of laboratory and instrumental examination of patients; development of a treatment plan for children and adults with dental diseases, taking into account the diagnosis, age and clinical picture in accordance with the current procedures for the</p>

		Russian Federation	experience: interpretation of the results of examination, laboratory, instrumental, pathoanatomical and other studies in order to recognize the condition or establish the presence or absence of a dental disease.	diagnostics; the use of basic antibacterial, antiviral and biological drugs; scientific principles of sterilization, disinfection and antiseptic treatment to avoid infection when working in a dental practice; clinical guidelines on the provision of medical care to patients with dental diseases Standards of care (The procedure for providing medical care, the Standard of Medical Care, Clinical Guidelines on the provision of medical care, etc.)	guidelines, taking into account the standards of medical care.	provision of medical care, clinical guidelines, taking into account the standards of medical care determination of symptoms, syndromes of dental diseases, establishment of nosological forms in accordance with the International Statistical Classification of Diseases and Related Health Problems, and other regulatory documents of the Ministry of Health of the Russian Federation
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4. Sections of the academic discipline and competencies that are formed when mastering them

№	Competence code	Section name of the discipline	The content of the section in teaching units
1	UC-1, UC-8, GPC-5, GPC-9, PC-3, PC-6	Introduction to medical microbiology. General bacteriology.	<p>Medical microbiology. Subject and tasks. The main stages of development, the contribution of domestic scientists. The importance of medical microbiology in the practice of a dentist. The main groups of microorganisms. Principles of classification and nomenclature of microorganisms: morphological, biochemical, molecular genetic. Structural and functional organization of the bacterial cell. Structure and functions of the cell wall (three types of cell wall), cytoplasmic membrane, cytoplasm, nuclear substance. Inclusions, flagella. Environmentally dependent elements of bacteria: capsule, spores. Metabolism and cultivation of bacteria. Types of metabolism: anabolism and catabolism. Classification of microorganisms by types of nutrition and energy production. Bacterial respiration as biological oxidation. Microbial cell enzymes. Basic principles of cultivation and identification of bacteria by cultural and enzymatic properties. Atypical bacteria. Morphological features of actinomycetes, rickettsias, chlamydia, mycoplasmas, spirochaetes. Significance in biology and medicine. Sterilization and disinfection. Methods of disinfection and sterilization. Principles of decontamination in dentistry. Antiseptics and disinfectants in dentistry. Variability of microorganisms. Phenotypic and genotypic variability. Modifications. Mutations. Spontaneous and induced mutations. Genetic recombination. Transformation. Transduction (general and specific). Conjugation. Extra-chromosomal factors of heredity (plasmids), their properties. The concept of genetic engineering.</p>
2	UC-1, UC-8,	Antibacterial drugs.	Microbiological bases of chemotherapy of infectious diseases. Antibiotics, chemotherapy drugs. Classification, spectrum and

	GPC-5, GPC-9, PC-3, PC-6		mechanism of action. Determination of the sensitivity of microbial flora to antimicrobial drugs. The problem of drug resistance of microorganisms. Side effect of antibiotics on the body.
3	UC-1, UC-8, GPC-5, GPC-9, PC-3, PC-6	General virology	History of virology development. Hypotheses about the origin and nature of viruses. Modern principles of classification and nomenclature of viruses. Features of the structural organization of viruses. Ecology of viruses. The concept of a virus and a virion. Viroids and prions, their role in pathology, stages of virus-cell interaction. Molecular bases of virus reproduction. Features of reproduction of RNA viruses (plus-RNA viruses, minus-RNA viruses), DNA viruses, retroviruses. Outcomes of virus-cell interaction. Productive, abortive and integrative infections. The persistence of viruses. Mechanisms and types of persistence. Virogenia. Methods of virus cultivation. Methods of studying viruses. Bacteriophages. Classification, mechanisms of interaction of a bacteriophage with a cell. Lysogeny. Concepts of profage. Practical significance of phages in biology and medicine.
4	UC-1, UC-8, GPC-5, GPC-9, PC-3, PC-6	The basics mycology	Classification and ultrastructure of fungi (micromycetes). Yeast: cultural features, organization of cells in colonies. Molds: cultural features, organization of cells in colonies. Dimorphic mushrooms. Manifestation of dimorphism. Sexual and asexual reproduction of fungi. Perfect and imperfect fungi (deuteromycetes). Characteristics of human mycoses: superficial, cutaneous, subcutaneous, systemic (deep). Factors of pathogenicity of fungi. Principles of diagnosis of mycoses. Principles of antifungal therapy.
5	UC-1, UC-8, GPC-5, GPC-9, PC-3, PC-6	Infectious process. Pathogenicity and virulence of microorganisms.	Infectious process. Infectious disease. Types of infection in the population: sporadic diseases, epidemic, pandemic. Natural focal infections. Primary, secondary (opportunistic), superinfection, relapse. Exogenous and endogenous infections. The concept of intrahospital infections. Forms of infection: acute, chronic, latent. The concept of the persistence of the pathogen. Reservoir and source of infection. Sapronoses, anthroponoses, zoonoses. Bacteriocarriage. Mechanisms of pathogen transmission. Stages of the development of the infectious process. The entrance gate of infection. Periods of infection development. Mechanisms of generalization of the infectious process. Bacteremia, septicemia, toxinemia, viremia. The concept of the ecology of bacteria as the basis of the doctrine of the pathogenicity of microbes. Pathogenic, conditionally pathogenic and non-pathogenic bacteria. Pathogenicity as a sign of a species, virulence as a sign of a strain. Factors of bacterial pathogenicity. Adhesion and colonization factors. Factors of invasion. Antiphagocytic factors. Toxin formation. Classification of bacterial toxins. Exo- and endotoxins. Mechanisms of action of toxins. Superantigens. Secondary intoxication. Genetic basis of bacterial pathogenicity. Persistence. Direct and immunologically-mediated pathogenicity. Pathogenicity of viruses. The persistence of viruses. Mechanisms of virus variability.
6	UC-1, UC-8, GPC-5, GPC-9, PC-3, PC-6	The normal microflora of the oral cavity	Normal microflora of the human body. Normal (resident) human microflora. Permanent (obligate) and non-permanent (optional) microflora of the human body. Physiological significance of microflora and its role in pathology. Microflora of the oral cavity. Characteristics of obligate (anaerobic and aerobic) microflora of the oral cavity: taxonomy, ecology, role in

			<p>pathology of the maxillofacial region. Gram-negative (undisputed) anaerobic bacteria (vaillonella, bacteroids, prevotella, porphyromonads, fusobacteria, leptotrichia, etc., convoluted forms of gram-negative anaerobic bacteria - treponema, etc.). Gram-positive indisputable anaerobic bacteria (peptococci, peptostreptococci, actinomycetes, Corynebacteria, lactobacilli). Gram-positive anaerobic spore bacteria (clostridia). Characteristics of facultative-anaerobic and aerobic microflora of the oral cavity: taxonomy, ecology, role in pathology of the maxillofacial region. Gram-positive bacteria (microaerophilic streptococci, enterococci, staphylococci, actinobacilli, etc.). Gram-negative bacteria (neisseria, hemophilic bacteria, Pseudomonas, enterobacteria). Characteristics of eukaryotic microbes of the oral cavity: taxonomy, ecology (fungi, protozoa), role in the pathology of the maxillofacial region. Microecology of the oral cavity. Formation of the microbial flora of the oral cavity during life. Factors contributing to and preventing microbial colonization of the oral cavity. Microbiocenosis and the doctrine of biofilms. The main biotopes of the oral cavity (biofilm of the oral mucosa, biofilm of the tongue, salivary gland ducts and saliva, gingival groove and gingival fluid, oral fluid – mixed saliva, dental biofilm - plaque, plaque) and methods of their study. The concept of dysbiosis (dysbiosis). Normal microflora in the pathology of the oral cavity. Etiology and pathogenesis of dental caries. Characteristics of the cariesogenic microflora. Formation of dental plaque. Features of dental plaque in pathology (dental caries, gingivitis, periodontitis, ulcerative necrotic gingivostomatitis). Mechanisms of quorum sensing between microbes in the biofilm of the oral cavity. Tooth biofilm and the pathogenesis of dental caries. Etiology and mechanisms of tartar formation. Microbial flora and immune processes in periodontal diseases. Characteristics of periodontopathogenic flora. Pathogens and pathogenesis of periodontitis. Pathogenesis and immune processes in odontogenic infection. Characteristics of pathogens of odontogenic infection and actinomycosis. Microbial flora and immune processes in diseases of the oral mucosa. Characteristics of pathogens of impetigo, stomatitis, syphilis, spirochetosis and other bacterial infections accompanied by manifestations in the oral cavity. Diseases of fungal etiology with lesions of the oral mucosa. Characteristics of pathogens of candidiasis and other mycoses accompanied by manifestations in the oral cavity. Diseases of viral etiology with lesions of the oral mucosa. Characteristics of herpes viruses, enteroviruses, human immunodeficiency viruses, foot-and-mouth disease. Microbial flora of the oral cavity as an etiological factor in systemic diseases of the body. The importance of chronic foci of infection in the oral cavity in the development of general somatic pathology. The role of the microbial flora of the oral cavity in the development of infectious endocarditis.</p>
8	UC-1, UC-8, GPC-5, GPC-9, PC-3,	Special medical Bacteriology	<p>Methods of laboratory diagnostics of infectious diseases of microbiological research used in dentistry (express diagnostics, microbiological and immunological). Pyogenic cocci. Staphylococci. Streptococci. Meningococci. Gonococci. Classification. Characteristic. Role in pathology. Immunity. Laboratory diagnostics. Treatment and prevention.</p>

	PC-6		<p>Family <i>Enterobacteriaceae</i>. <i>Escherichia</i>. <i>Shigella</i>. Taxonomy and classification. Morphology and other biological properties. Pathogenesis and clinic of the diseases caused. Immunity. Laboratory diagnostics. Prevention. Nosocomial infections caused by enterobacteria.</p> <p>Causative agents of diphtheria, whooping cough, paracoccussis. Biological properties. Pathogenesis and clinic of the diseases caused. Immunity. Laboratory diagnostics. Specific prevention.</p> <p><i>Mycobacterium tuberculosis</i>. Characteristic. Pathogenesis and clinic of tuberculosis. Immunity. Laboratory diagnostics. Specific prevention.</p> <p>Pathogenic clostridia and clostridiosis. Pathogens of tetanus, anaerobic wound infection, botulism. Ecology of pathogens. Pathogenesis and clinic of the diseases caused. Laboratory diagnostics. Specific therapy and prevention of clostridiosis.</p> <p>Pathogenic spirochetes and spirochetoses. The causative agent of syphilis. Biological properties. Pathogenesis and clinic of syphilis. Immunity. Prevention. Characteristic. Pathogenesis and clinic of the disease. Laboratory diagnostics. Prevention. Ulcerative necrotic angina of Vincent. Pathogens, pathogenesis. The clinic of the disease. Prevention, principles of treatment.</p> <p>Chlamydia. <i>Mycoplasma</i>. Features of morphology, physiology. Pathogenesis and clinic of the diseases caused. Diagnostics.</p> <p><i>Pseudomonas aeruginosa</i>. Taxonomy and classification. Morphology and other biological properties. Pathogenesis and clinic of the diseases caused. Immunity. Laboratory diagnostics. Prevention. Nosocomial infections caused by pseudomonads.</p>
9	UC-1, UC-8, GPC-5, GPC-9, PC-3, PC-6	Special medical virology	<p>Orthomyxoviruses. The flu virus. Structure and other biological properties. The pathogenesis of influenza. Immunity. Diagnostics. Specific prevention.</p> <p>Paramyxoviruses. Classification. General characteristics. Pathogenesis and clinic of measles and mumps. Prevention.</p> <p>Picornaviruses. Polio virus. Pathogenesis and clinic of polio. Specific prevention. Coxsackie viruses, ESNO – pathogens of polio-like diseases.</p> <p>Hepatitis A, B,C,D, E viruses. General characteristics. Pathogenesis and clinic of viral hepatitis A. B and C. Laboratory diagnostics. And mmunit. Prevention.</p> <p>Human immunodeficiency virus (HIV). Pathogenesis and clinic of the disease. Laboratory diagnostics.</p> <p>Human herpesviruses. Herpes simplex viruses. Primary and recurrent herpes. Varicella zoster and herpes zoster virus. Cytomegalovirus. Pathogenesis and clinic of the diseases caused. Diagnostics.</p>

5. Volume of the academic discipline and types of academic work

Type of educational work	Labor intensity		Labor intensity (AH) in semesters	
	volume in credit units (CU)	volume in academic hours (AH)	3	4
Classroom work, including	2,4	86	44	42
Lectures (L)		18	10	8
Laboratory practicum (LP)*		68	34	34
Practicals (P)				
Seminars (S)				
Student's individual work (SIW)	1,6	58	28	30
Mid-term assessment				

exam	1	36		exam 36
TOTAL LABOR INTENSITY	5	180	72	108

6. Content of the academic discipline

6.1. Sections of the discipline and types of academic work

№	Name of the section of the academic discipline	Types of academic work*(in AH)					
		L	LP	P	S	SIW	Total
1.	Introduction to medical microbiology. General bacteriology.	4		15	-	8	27
2.	Antibacterial drugs.	-		3	-	5	8
3.	General virology	-		6	-	5	11
4.	Basics of mycology	2		-	-	3	5
5.	Infectious process. Pathogenicity and virulence of microorganisms. Variability of microorganisms	4		3	-	5	12
6.	The normal microbiota of the human body. The normobiota of the oral cavity is normal and in pathology.	4		7	-	4	15
7.	Special medical Bacteriology	4		28	-	14	46
8.	Special medical Virology	4		6	-	14	24
		18		68			
			86			58	144
	TOTAL					144	

* - L – lectures; LP – laboratory practicum; P – practicals; S – seminars; SIW – student's individual work.

6.2. Thematic schedule of educational work types:

6.2.1 Thematic schedule of lectures

№	Name of lecture topics	Volume in AH	
		semester 3	semester 4
1	Factors of pathogenicity and virulence of bacteria. Bacterial toxins.	2	
2	Introduction to Medical Mycology	2	
3	Microflora of a human body.	2	
4	Microflora of the oral cavity	2	
5	Genetic mechanisms of bacterial variability	2	
6	Enterobacteria. Shigella.		2
7	Pathogenic spirochetes. The causative agent of syphilis. Vincent's angina.		2
8	General characteristics of viral hepatitis. Hepatitis A, B, C viruses.		2
9	Human immunodeficiency virus		2
	TOTAL (total - AH)	10	8
			18
	Streptococci.		2
	Pathogens of tuberculosis.		2
	Microflora of the oral cavity in pathology. Cariesogenic microorganisms.		2
	Microflora of the oral cavity in pathology.		2

	Periodontal microorganisms	
	Paramyxoviruses.	2
	Herpesviruses.	2

6.2.2. The thematic plan of laboratory practicums (*if this type of classes is stipulated in the curriculum*)

6.2.3. Thematic plan of practicals

№	Name of the topics of practicals	Volume in AH	
		semester 3	semester 4
1.	1. Introduction in medical microbiology. 2. Prokaryotes and their properties. 3. Morphological classification of bacteria.	3	
2.	1. Structure of bacterial cell. 2. Special staining procedures for studying structure of bacteria. 3. The methods of bacteria staining. Gram stain.	3	
3.	<u>Metabolism of bacteria</u> Anabolism. Bacterial growth and cell division. Phases of growth in bacterial culture. Culture media for growing bacteria. Types of media. Catabolism. Principles of anaerobes culturing. Culturing method. Methods of obtaining pure culture. Accumulation of a pure culture. Methods of the bacteria identification. Determination of microbial sensitivities to antimicrobial agents.	3	
4.	<u>Antibiotics.</u> 1. Antibiotics. History of antibiotic discovery. 2. Classification of antibiotics. The modes of action of antimicrobial agents on bacterial cells. Resistance of bacteria. Mechanisms of resistance.	3	
5.	<u>Nontypical bacteria.</u> Structure and general properties of mycoplasmas, rickettsia, chlamydia, mycobacteria, spirochaetes, and actinomyces.	3	
6.	<u>Virology. Part 1</u> 1. General characteristics and classification of viruses. 2. Components of virion. Viroids and prions. 3. Culturing of viruses. Viral replication. Stages of viral replication.	3	
7.	<u>Virology. Part 2</u> 1. Mechanism of viral replication. Functions of virion proteins. 2. The results of virus-cell interaction. Productive, abortive and persistent infections. 3. Types of viral infections: productive, abortive and persistent infections. Mechanism of viral persistence. Detection of viruses in infected objects.	3	
8.	Principles of sterilization in microbiology.	3	
9.	Microbiota of a human body. Classification. Function. Microbiota of the oral cavity/ Mechanisms of formation. Obligate and facultative microbiota. Microbiocenosis of the different biotopes of the oral cavity.	4	
10.	The role of normal microflora in diseases of the oral cavity. The importance of the oral microflora in the development of dental caries, odontogenic infection, periodontal diseases and in the inflammatory processes of the maxillofacial region. Diseases of the mucous membranes of the oral cavity (stomatitis). Methods of studying the microflora of the oral cavity in dental diseases.	3	
11.	Specific prophylaxis and prevention of infections. Vaccines. Pathogenicity and virulence of bacteria. Infectious process.		3

	Genetics of microorganisms.		
12.	Principles of laboratory diagnostics of infectious diseases. Staphylococci. Staphylococcal lesions of the oral cavity. Pseudomonas aeruginosa.		3
13.	1. General characteristics of Streptococci. S. pyogenes, S. pneumonia 2. Hemophilus influenzae.		3
14.	1. Neisseria gonorrhoeae, 2. Neisseria meningitidis. 3. Mycoplasmas. M. pneumoniae. U. urealyticum.		3
15.	1. Escherichia. 2. Shigella 3. Salmonella as agents of gastroenteritis		3
16.	Clostridia of gas gangrene, Cl. tetani, Cl. botulinum		3
17.	1. Corynebacterium diphtheriae. 2. Mycobacterium tuberculosis		3
18.	1. Principles of diagnosis of viral infections. Pathogenicity of viruses. 2. Paramyxoviruses. 3. Orthomyxoviruses		3
19.	1. HIV 2. Rhabdoviruses.		3
20.	1. Hepatitis viruses 2. Picornaviruses.		3
	1. Chlamydia. Ch. trachomatis, Ch. psittaci, Ch. pneumoniae. 2. Pathogenic spirochetes.		
21.	1. Role of the oral microbiota in caries and periodontitis. 2. Oral candidiasis and actinomycosis. Stabilizing and aggressive microflora of the oral cavity. Odontogenic infections. Dental caries. Microflora in pulpitis. Microflora in periodontal diseases. Odontogenic and non-odontogenic infections of the soft tissues of the face and neck, extra-maxillary sinus. The dominant representatives of the microflora in serous, purulent and gangrenous inflammation. Methods of studying the microflora of the oral cavity in dental diseases. Rules for sampling material during microbiological examination of the oral cavity.		3
22.	Oral microbiota and stomatitis. Diseases of the mucous membranes of the oral cavity. Stomatitis: bacterial, viral and fungal. Nonspecific and specific stomatitis. Fusospirochetosis (Vincent's angina). Oral candidiasis. Actinomycosis. Specific manifestations in the oral cavity in systemic diseases (syphilis, measles, mumps, etc.) The oral cavity as the entrance gate of infection. Microbial flora of the oral cavity as an etiological factor in systemic diseases of the body.		4
	TOTAL (total - AH)	34	34

6.2.4. Thematic plan of seminars (*if this type of classes is stipulated in the curriculum*)

6.2.5. Types and topics of student's individual work (SIW)

№	Name of the section of the academic discipline	Types and topics of SIW	Volume in AH	
			Term	
			semester 3	semester 4
1.	Introduction to medical microbiology	Work with literature sources; preparation for classes in an interactive form; writing abstracts*; preparation for boundary control, including work	8	

	General bacteriology	with electronic educational resources (computer testing in on-line mode on the website of distance education of PIMU)		
2.	Antibacterial drugs	Work with literature sources, including lecture materials; preparation for classes in an interactive form; preparation for boundary control, including work with electronic educational resources (computer testing in on-line mode on the website of distance education of PIMU)	5	
3.	General virology	Independent work with lecture material and educational literature for preparation for laboratory classes, including in interactive form, exam; writing essays*	5	
4.	Fundamentals of mycology	Work with literature sources, including lecture materials; preparation for classes	3	
5.	Infectious process. Pathogenicity and virulence of microorganisms	Work with literature sources, including lecture materials; preparation for classes in an interactive form; preparation for boundary control, writing abstracts*	5	
6.	The normal microflora of the oral cavity is normal and pathological	Work with literature sources, including lecture materials; preparation for classes in an interactive form; preparation for boundary control, including work with electronic educational resources (computer testing in on-line mode on the website of distance education of PIMU)	2	2
7.	Special medical bacteriology	Work with literature sources, including lecture materials; preparation for classes in an interactive form; preparation for boundary control, including work with electronic educational resources (computer testing in on-line mode on the website of distance education of PIMU); writing abstracts*		14
8.	Special medical virology	Work with literature sources, including lecture materials; preparation for classes in an interactive form; preparation for boundary control, including work with electronic educational resources (computer testing in on-line mode on the website of distance education of PIMU); writing abstracts*		14
			28	30
TOTAL (total - 58AH)			58	

7. Types of assessment formats for ongoing monitoring and mid-term assessment

№	Semester No.	Types of control		Name of section of academic discipline	Competence codes	Assessment formats		
						types	number of test questions	number of test task options
1.	3	Current monitoring	Control of mastering the topic	Introduction to medical microbiology. General bacteriology.	UC-1, UC-8, GPC-5, GPC-9,	Security questions	5	2
						Written control work on the section	5	2

			the student's individual work		PC-3, PC-6	"General microbiology Report	1	10
						Test tasks	20	Unlimited (during computer testing)
						Exam questions	1	21
2.	3	Current monitoring	Control of mastering the topic Monitoring the student's individual work	Antibacterial drugs.	UC-1, UC-8, GPC-5, GPC-9, PC-3, PC-6	Test tasks	5	Unlimited
						Examination questions (electronic or text document in enlarged font), Examination questions	1	3
						Security questions	5	2
3	3	Current monitoring	Control of mastering the topic Monitoring the student's individual work	General virology	UC-1, UC-8, GPC-5, GPC-9, PC-3, PC-6	Test tasks	20	Unlimited
						Security questions	5	2
						Exam questions	1	4
						Report	1	2
4	3	Current monitoring	Control of mastering the topic Monitoring the student's individual work	Fundamentals of mycology.	UC-1, UC-8, GPC-5, GPC-9, PC-3, PC-6	Test tasks	5	Unlimited
						Exam questions	1	2
						Security questions	3	2
5.	3	Current monitoring	Control of mastering the topic Monitoring the student's individual work	The infectious process. Pathogenicity and virulence of microorganisms.	UC-1, UC-8, GPC-5, GPC-9, PC-3, PC-6	Test tasks	20	Unlimited
						Oral individual survey. Short-term control work on the topic "Infectious process" (current control)	5	2
						Security questions	2	4
						Exam questions	1	4
						Report	1	2

6	3	Current monitoring	Control of mastering the topic	The normal microflora of the oral cavity is normal and pathological.	UC-1, UC-8, GPC-5, GPC-9, PC-3, PC-6	Test tasks	20	Unlimited
			Monitoring the student's individual work			Exam questions	1	20
						Security questions	3	2
7	4	Current monitoring	Control of mastering the topic	Special medical bacteriology	UC-1, UC-8, GPC-5, GPC-9, PC-3, PC-6	Test tasks	20	Unlimited
			Monitoring the student's individual work			Security questions	5	2
						individual survey Written control work on the section "Private microbiology" (boundary control)	5	2
						Exam questions	1	15
						Report	1	3
8	4	Current monitoring	Control of mastering the topic	Special medical virology	UC-1, UC-8, GPC-5, GPC-9, PC-3, PC-6	Test tasks	20	Unlimited
			Monitoring the student's individual work			Oral individual survey Short-term control work (current control)	5	2
						Security questions	3	3
						Exam questions	1	8
						Report	1	2
2.	4	Mid-term assessment	Exam/ Credit	All sections of the discipline	UC-1, UC-8, GPC-5, GPC-9, PC-3, PC-6	Security questions	2	46
						Situational tasks	2	46

8. Educational, methodological and informational support for mastering the academic discipline (printed, electronic publications, the Internet and other network resources)

8.1. Key literature references

p/no.	Name according to bibliographic requirements	Number of instances	
		in the library	at the department
1	2	3	4

1	Zverev, V.V. Medical Microbiology, Virology, Immunology: textbook. Vol. 1: textbook / V. V. Zverev, M. N. Boichenko; Zverev V. V.; Boichenko M. N. - Moscow: GEOTAR-Media, 2020. - 384 p. – ISBN 978-5-9704-5607- 1		
2	Zverev, V.V. Medical Microbiology, Virology, Immunology : textbook : Vol. 2. : textbook / V. V. Zverev, M. N. Boichenko; Zverev V. V.; Boichenko M. N. - Moscow: GEOTAR-Media, 2020. - 392 p. – ISBN 978-5-9704-5719-1.		
3	Medical Microbiology, Virology and Immunology. Lecture Notes: textbook / M. N. Artamonova, N. I. Potaturkina-Nesterova, N. A. Ilyina, I. S. Nemova; Artamonova M. N.; Potaturkina-Nesterova N.I.; Ilyina N. A.; Nemova I. S. - Moscow: GEOTAR-Media, 2021. - 352 p. – ISBN 978-5-9704-6043-6.		
4	Maianskii, A.N. Lectures in immunology / A. N. Maianskii, S. M. Belotsky; Maianskii A.N.; Belotsky S. M. - N. Novgorod : NSMA , 2004.		
5	Murray, P. R. Basic medical microbiology / P. R. Murray. – Philadelphia : Elsevier, 2018. – 232 p. : il. – (Student consult). – ISBN 9780323476768.		
6	<i>Jawetz, Melnick and Adelberg's medical microbiology / K. C. Carroll, J. A. Hobden, S. Miller, S. A. Morse. – 27th ed. – New York : McGraw-Hill Education, 2016. – IX, 852 p. : il. – ISBN 978-1-2592-5534-2.</i>		

8.2. Further reading

p/no.	Name according to bibliographic requirements	Number of instances	
		in the library	at the department
1	2	3	4
1.	General microbiology and microflora of plants : textbook / M. I. Zaslavskaya, T. V. Makhrova, N. I. Ignatova [et al.] ; FSBEI HE PRMU MOH Russia. – N. Novgorod : Publishing House of Privolzhskiy Research Medical University, 2021.		
2.	General microbiology: bacteriology, virology, mycology : textbook / M. I. Zaslavskaya, T. V. Makhrova, N. I. Ignatova [et al.] ; FSBEI HE PRMU MOH Russia. – N. Novgorod : Publishing House of Privolzhskiy Research Medical University, 2021.		
3.	General microbiology and microbiota of the oral cavity = General microbiology and microbiota of the oral cavity : testbook / M. I. Zaslavskaya, T. V. Makhrova, O. A. Lukova [and others]. - Nizhny Novgorod: PIMU Publishing House, 2021. - 1 file (4.3 Mb). Maiyanskii, A.N.		
4.	Immunology = Tests in general immunology: tests / A. N. Maiyanskii, M. I. Zaslavskaya; Maiyanskii, A.N.; Zaslavskaya, M. I. - N. Novgorod : NSMA , 2005.		
5	Zaslavskaya, M. I. Applied microbiology and immunology : textbook for the international english speaking medical students / M. I. Zaslavskaya ; Zaslavskaya M. I. – N. Novgorod : Published House NSMA, 2007. – 92		
6	Mims` medical microbiology and immunology / P. L. Chiodini, H. M. Dockrell, R. Goering, M. Zuckerman. – 6th ed. – Edinburgh ; London ; New York : Elsevier, 2019. – 551 p. : il. – (Student consult). – ISBN 978-0-7020-7156-0.		

8.3. Electronic educational resources for teaching academic subjects

8.3.1. Internal Electronic Library System of the University (IELSU)

Name of the electronic Resource	Brief description (content)	Access conditions	Number of users
Internal Electronic Library System (ELS) http://nbk.pimunn.net/MegaPro/Web	The works of the teaching staff of the University: textbooks, textbooks, collections of tasks, methodological manuals, laboratory work, monographs, collections of scientific papers, scientific articles, dissertations, abstracts of dissertations, patents	From any computer and mobile device using an individual login and password. Access mode: http://nbk.pimunn.net/MegaPro/Web	Not limited

8.3.2. Electronic educational resources acquired by the University

№ p/p	Name electronic resource	Brief description (content)	Access conditions	Quantity users
1.	The digital library system "Student's Consultant"	contains full-text versions of digital textbooks and study guides in all areas and disciplines of medical education in accordance with the curricula and requirements of the Federal State Educational Standard. There is an English interface.	<i>on the <u>platform of the PRMU Digital Library</u> through the appropriate banner or directly through the e-book found in the catalog. To access the full text, you need to log in to the reader's Personal Account (login – the number of the campus card (eleven numerals), password – date of birth without spaces (for example – 05022002) directly on the platform of <u>DLS "Student's Consultant"</u>. To access the resource, it is necessary to pass a personal registration from the computers of the Scientific Library or University.</i> In the future, you can work from any computer or mobile device. Users who have not worked with the database for more than a year need to confirm their registration: log in to the database with their user name and password from the computers of the Scientific Library or University or through the Personal Account of the user of the PRMU Digital Library.	Not limited Validity period: until 31.12.2022
2.	The digital library	includes:	on the <u>platform of the PRMU</u>	Not

	"Doctor's Consultant" i	<ul style="list-style-type: none"> • national guidelines for all areas of medicine • clinical recommendations • training manuals • monographs • atlases • pharmaceutical reference books 	<p>Digital Library using the appropriate banner or directly through the e-book found in the catalog. To access the full text, you need to log into the Reader's Personal Account (login – the number of the campus card (eleven numerals), password – date of birth without spaces (for example – 05022002))</p> <p>directly on the DLS "Doctor's Consultant" platform or on the DLS "Student's Consultant" platform. To access the resource, it is necessary to pass a personal registration from the computers of the Scientific Library or University. Please note: for users already registered in the Student's Consultant DLS, the re-registration is not required.</p> <p>In the future, you can work from any computer or mobile device.</p>	<p>limited</p> <p>Access until 31.12.23</p>
3.	The digital library BookUp	The digital library BookUp contains educational and scientific medical literature of Russian publishers. The list of publications available for reading can be found in the section "My Books".	<p><i>on the platform of the PRMU Digital Library through the appropriate banner or directly through the e-book found in the catalog. To access the full text, you need to log in to the reader's Personal Account (login – the number of the campus card (eleven numerals), password – date of birth without spaces (for example – 05022002))</i></p> <p><i>directly on the platform DLS "BookUp":</i></p> <p><i>- access is free from university computers (without authorization);</i></p> <p><i>- to access from external IP addresses, it is necessary to pass a personal registration from the computers of the Scientific Library or University. In the future, you can work from any computer or mobile device.</i></p>	<p>Not limited</p> <p>until 31.05.2023</p>
4.	The digital library "Urait".	has a collection of publications on psychology, ethics,	1. By means of the corresponding banner on the	Not limited

		conflictology	home page <u>of the PRMU Digital Library</u> or directly through an e-book found in the catalog. To access the full text, you need to log in (login – the number of the campus card, password – date of birth without spaces (for example – 05022002); 2. Next, select the section "Catalog", "Subscriptions of educational institutions" (Privolzhsky Research Medical University). To work with a specific digital publication, you need to go to the section you are interested in, select the desired book and click the "Study" button.	Access until 11.02.2023
5.	Electronic periodicals as part of the database "Scientific Electronic Library eLibrary https://elibrary.ru	Electronic medical magazines	From university computers. Access mode: https://elibrary.ru	Not limited until 31.12.2022
6.	Integrated Information and Library system (IBS) of the scientific and educational medical cluster of the Volga Federal District - "Srednevolzhsky" (contract on a free basis)	Electronic copies of scientific and educational publications from the collections of libraries participating in the scientific and educational medical cluster of the Volga Federal District "Srednevolzhsky"	Access by individual login and password from any computer and mobile device. Access mode: websites of libraries participating in the project	Not limited Unlimited
7.	Electronic legal reference system "Consultant Plus" (contract on a free basis) http://www.consultant.ru	Regulatory documents regulating the activities of medical and pharmaceutical institutions	From the computers of the scientific library. Access mode: http://www.consultant.ru/	Not limited unlimited
8.	National Digital Library (NDL)	The Virtual Reading Room of the National Digital Library (NDL) contains a combined digital catalog of the collections of major Russian libraries, archives, museums and digital copies of works on a wide range of subject areas. Some publications (works that have passed into the public domain; works of educational and	Works restricted by copyright are accessible only from the Library computers (Medizinskaya Str.3a, Hall of Catalogues and Electronic Information Resources). You can get acquainted with the content of the NDL at: <u>rusneb.ru</u>	Not limited Access to the resource until 13.11.2023

	scientific significance that have not been reprinted in the last 10 years) are on open access.		
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8.3.3 Open access resources

№ p/p	Name electronic resource	Brief description (content)	Access conditions	Number of users
Russian resources				
1.	Federal Electronic Medical Library (FEMB) http://HЭБ.pdf	Full-text electronic copies of printed publications and original electronic publications on medicine and biology	From any computer located on the Internet. Access mode: http://HЭБ.pdf	Not limited
2.	Scientific Electronic Library eLIBRARY.RU https://elibrary.ru	Abstracts and full texts of scientific publications, electronic versions of Russian scientific journals	From any computer located on the Internet. Access mode: https://elibrary.ru	Not limited
3.	Scientific electronic library of the Open CyberLeninka access http://cyberleninka.ru	Full texts of scientific articles with annotations published in scientific journals of Russia and neighboring countries	From any computer located on the Internet. Access mode: https://cyberleninka.ru	Not limited
Foreign resources				
1.	digital scientific resources of Springer publishing house	<ul style="list-style-type: none"> • Access to digital scientific resources of Springer publishing house is open for students and employees of PRMU. Materials from the following digital collections are available: • Full-text collection of digital journals (1997-2021) and Springer e-books (2005-2021): https://rd.springer.com/ • Full-text collection of digital journals Springer Nature : http://www.nature.com/siteindex/index.html • Collection of scientific protocols on various branches of knowledge Springer Protocols: www.springerprotocols.com • Abstract database on pure and applied mathematics Zentralblatt MATH: https://zbmath.org/ • Collection of scientific materials in the field of 	from PRMU computers - free access;- from external IP addresses : with individual login / password (personal registration from the university network using corporate mail is required - pimunn.net); send an email to lib@pimunn.ru with indication of full name, personal corporate mail).	Not limited

		<p>physical sciences and engineering Springer Materials: http://materials.springer.com/</p> <ul style="list-style-type: none"> • Nano database (information about nanomaterials and nanodevices): http://nano.nature.com/ 		
2.	The full-text database of periodicals of the American publishing house "Wiley"	<p>Journals annually occupy leading positions in the Journal Citation Report and have high impact factors. The content is represented by more than 1,600 scientific journals in various disciplines, including medicine and natural sciences. Chronological coverage: 2015-2022</p>	<p>- from PRMU computers- free access; - from external IP addresses - with individual login / password (<i>personal registration from the university network is required</i>). Attention! Remote access is valid for 60 days. To renew, you need to log in to your account from the university network. Access to the collection at: www.onlinelibrary.wiley.com</p>	Not limited
3.	The digital collection "Freedom"	<p>the platform Science Direct (over 3000 periodicals published by Elsevier). Subject: natural, technical and medical sciences. Chronological coverage: 2011-2022</p>	<p>From the computers of the university, from any computer with an individual login and password.</p>	<p>from PRMU computers at: https://www.scencedirect.com Online catalog of publications at the link</p>
4.	Scopus Database www.scopus.com	<p>Scopus is an international scientometrical database of abstracts and citations of peer-reviewed scientific literature with built-in tools for monitoring, analysis and visualization of research data.</p>	<p>Access to the resource only from PRMU computers: www.scopus.com.</p>	Not limited
5.	Web of Science Core Collection Database https://www.webofscience.com	<p>International Abstract Database of Scientific Citation</p>	<p>From the computers of the university, from any computer with an individual login and password. Access mode: https://www.webofscience.com</p>	Not limited
6.	Questel database Orbit https://www.orbit.com	<p>The patent database of the company Questel</p>	<p>From university computers. Access mode: https://www.orbit.com</p>	Not limited

			<u>m</u>	
Foreign open access resources (the main ones are indicated)				
1.	<p>PubMed URL: www.ncbi.nlm.nih.gov/pubmed US National Library of Medicine search engine</p> <p>PubMed (Bookshelf) URL: www.ncbi.nlm.nih.gov/books Full-text collection of books on medicine and biological sciences of the US National Library of Medicine</p>	The search engine of the US National Library of Medicine for the databases "Medline", "PreMedline"	From any computer and mobile device. Access mode: https://www.ncbi.nlm.nih.gov/pubmed	Not limited
2.	<p>Directory of Open Access Journals http://www.doaj.org</p>	Directory of open access to the full-text collection of periodicals	From any computer and mobile device. Access mode: http://www.doaj.org	Not limited
3.	<p>Directory of open access books (DOAB) URL: www.doabooks.org Directory of open access to the full-text collection of scientific books (over 10 thousand)</p>	Directory of open access to the full-text collection of scientific books	From any computer and mobile device. Access mode: http://www.doabooks.org	Not limited
4	Science Direct	Catalog of magazines and books of the Elsevier publishing house (more than 250 thousand articles in the public domain)	URL: www.sciencedirect.com	
5	World Health Organization	Reports, reviews, guidelines, recommendations of the World Health Organization	URL: www.who.int/en/	
6	BASE	The system of the international project ORCID DE provides a search for scientific information among 100 million open access documents of the world's archival collections	URL: www.base-search.net	
7	EDP OPEN	Collection of journals, books, materials of scientific conferences on the platform of the publishing house "EDP Science"	URL: www.edp-open.org	
8	Proceedings of the National Academy of Science (PNAS)	Polythematic database of scientific articles of the US National Academy of Sciences	URL: www.pnas.org	
9	The Online Books Page	University of Pennsylvania website offering free access to full-text scientific publications	URL: onlinebooks.library.upenn.edu	

9. Material and technical support for mastering an academic discipline

9.1. List of premises for classroom activities for the discipline

1. 1. For lectures there are: - lecture audiences of BFC (large and small halls); - Lecture room of the Morphological building; - lecture hall of hostel No. 3; - Lecture room of building No. 9. 2. For practical training on the basis of building No. 2 (BFK) there is: 4 specially equipped rooms (audiences) for holding seminars and practical classes in the study of disciplines with an area of 12, 15, 43, 44.3 m²; including a training laboratory for practical classes in microbiology and immunology with an area of 59 m².

9.2. List of equipment for classroom activities for the discipline

Computers: - Celeron 1700 - Core i3, i7-920 - NEW/C2D - laptop Fujitsu Siemens Amilo Laser
 printers: ML-1645 - Samsung ML-1210 MFP Canon ME-Y018, 3110 Overhead projector H
 1110 Multimedia projector Epson EMP-S3 Microscopic and macroscopic slides for practical
 training* Tables for practical exercises** Tables for lectures** Stands: - on the organization of
 the educational process at the department - Chronology of discoveries in microbiology and
 immunology - virology Equipment 1. Immersion microscopes. 2. Fluorescent microscope. 3.
 Thermostats. 4. Autoclaves. 5. Anaerostats. 6. Centrifuges. 7. FEK. 8. Laminar box 9. Electronic
 analytical balance 10. Household refrigerators 11. Microanaerostats 12. Disintegrators 13.
 Spectrophotometer 14. Pipette dispensers 15. pH microvoltmeter 16. Desks 17. Student and
 classroom tables 18. Water distiller 19. Tocacci microtiter 20. Drying cabinet 21. Air sterilizer
 22. Laboratory table 23. Bactericidal portable irradiator 24. Bactericidal wall irradiator 25.
 Single-element board for chalk 1000*2000

9.3. A set of licensed and freely distributed software, including domestic production

Item no.	Software	number of licenses	Type of software	Manufacturer	Number in the unified register of Russian software	Contract No. and date
1	Wtware	100	Thin Client Operating System	Kovalev Andrey Alexandrovich	1960	2471/05-18 from 28.05.2018
2	MyOffice is Standard. A corporate user license for educational organizations, with no expiration date, with the right to receive updates for 1 year.	220	Office Application	LLC "NEW CLOUD TECHNOLOGIES"	283	without limitation, with the right to receive updates for 1 year.
3	LibreOffice		Office Application	The Document Foundation	Freely distributed software	
4	Windows 10 Education	700	Operating systems	Microsoft	Azure Dev Tools for Teaching Subscription	
5	Yandex. Browser		Browser	«Yandex»	3722	
6	Subscription to	170	Office	Microsoft		23618/HN100

MS Office Pro for 170 PCs for FGBOU VO "PIMU" of the Ministry of Health of Russia	Application	30 LLC "Softline Trade" from 04.12.2020
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10. List of changes to the working program (to be filled out by the template)

Federal State Budgetary Educational Institution of Higher Education
"Privolzhsky Research Medical University"
Ministry of Health of the Russian Federation
(FSBEI HE "PRMU" of the Ministry of Health of Russia)

Department of

EPIDEMIOLOGY, MICROBIOLOGY AND EVIDENCE-BASED MEDICINE

CHANGE REGISTRATION SHEET

working program for the academic discipline

MICROBIOLOGY, VIROLOGY –

MICROBIOLOGY OF THE ORAL CAVITY

Specialty: **31.05.03 DENTISTRY**

Qualification: **DENTIST**

Mode of study: **FULL-TIME**

Position	Number and name of the program section	Contents of the changes made	Effective date of the changes	Contributor's signature
1				

Approved at the department meeting
Protocol No. _____ of _____ 20__

Head of the Department of Epidemiology,
microbiology and evidence-based medicine, DSci. of
Medical Sciences, Associate Professor _____ / (Kovalishena O.V.)
(signature) (print name)