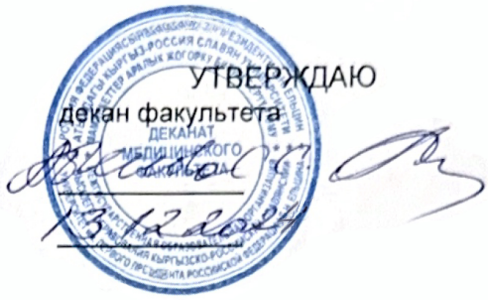
MINISTRY OF EDUCATION AND SCIENCE OF THE KYRGYZ REPUBLIC

Government-run Educational Institution of Higher Professional Education
Kyrgyz-Russian Slavic University named after B.N. Yeltsin



MICROBIOLOGY, VIROLOGY
Course Outline (Module)

Assigned to the department of	Microbiology and virusology
Academic Curriculum	31050150_24_1LDi.pli.xml 560001 - KR General Medicine (For foreign students)
Qualification:	Medical
Mode of Study	intramural
Total Credit Value	**6 credit points**

Course Hours	216
Including:	
In-class learning	144.8
Individual work	53.7
Exams	17.5

Scope of Testing Semesters:
exams 3
credits 2

Discipline hours distribute in the semesters

Course Hours Scheduling (per semester)						
Semester Academic Year	**2 (2.1)**		**3 (2.2)**		Total	
Weeks	18		18			
Type of training	AC	CO	AC	CO	AC	CO
Lectures	18	18	18	18	36	36
Practical Session	54	54	54	54	108	108
Including interactive	0.3	0.3			0.3	0.3
Total In-class Session			0.5	0.5	0.5	0.5
Total aud.	72	72	72	72	144	144
Face-to-face Learning	72.3	72.3	72.5	72.5	144.8	144.8
Individiual Work	35.7	35.7	18	18	53.7	53.7
Hours for control			17.5	17.5	17.5	17.5
Total	108	108	108	108	216	216

The Course outline developed by:

Teacher of microbiology and virology, Koshokova E.A., _____ *professor Sadybakasova G.K.*_____

*The Head of Department, doctor of medical sciences, professor Sadybakasova G.K.*_____

Reviewer(s):

*Candidate of medical sciences, associate professor of microbiology, virology and immunology department, Niyazalieva M.S.*_____

*Candidate of medical sciences, associate professorof infectious diseases department of KRSU, Kuvatova D.J.*_____

The Course outline

Microbiology and virology

In accordance with Academic Curriculum:

560001 KR - General medicine (for foreign students)

Confirmed by KRSU Board of Academics in 28/02/2024 record № 7

The Course Outline endorsed by

Microbiology and virology Department Meeting

Record of 10. 02. 2024 year № 7

Valid for: 2024-2028 academic year

The Head of Department, doctor of medical sciences, professor Sadybakasova G.K._____

The course outline endorsed for the following academic year

Chairman of the Educational and Methodological Board

26.08 2023 year.

The course outline has been revised, considered and endorsed for implementation
in 2023-2024 academic Year at the Staff Meeting of **Microbiology and virusology** Department

Record of 22.06. 2023 year. № 11

The head of department, doctor of medical sciences, professor Sadybakasova G.K.

The course outline endorsed for the following academic year

Chairman of the Educational and Methodological Board

28.08 2024 year.

The course outline has been revised, considered and endorsed for implementation
in 2024-2025 academic Year at the Staff Meeting of **Microbiology and virusology** Department

Record of 20.06 2024 year. № 11

The head of department, doctor of medical sciences, professor Sadybakasova G.K.

The course outline endorsed for the following academic year

Chairman of the Educational and Methodological Board

_____ 2025 year.

The course outline has been revised, considered and endorsed for implementation
in 2025-2026 academic Year at the Staff Meeting of **Microbiology and virusology** Department

Record of _____ 2025 year. № ___

The head of department, doctor of medical sciences, professor Sadybakasova G.K._____

The course outline endorsed for the following academic year

Chairman of the Educational and Methodological Board

_____ 2026 year.

The course outline has been revised, considered and endorsed for implementation
in 2026-2027 academic Year at the Staff Meeting of **Microbiology and virusology** Department

Record of _____ 2026 year. № ___

The head of department, doctor of medical sciences, professor Sadybakasova G.K._____

1. COURSE OUTLINE OBJECTIVES	
1.1	The objectives of mastering the discipline "Microbiology, Virology" is to obtain knowledge about pathogenic and opportunistic microorganisms for humans; about their structure, physiology, genetics, ecology; about the role of microorganisms in the etiology and pathogenesis of infectious diseases; about immunity as a state of a macroorganism in which an infectious process develops and its changes under various influences of environmental factors; about methods of microbiological diagnostics, specific prophylaxis and therapy of infectious diseases.

2. PLACE OF THE COURSE IN THE EDUCATIONAL PROGRAM	
Educational Program	Б1.О
2.1	**Students' Preliminary Training Requirements:**
2.1.1	Biochemistry
2.1.2	Histology, embryology, cytology
2.1.3	normal physiology
2.1.4	Anatomy
2.1.5	Biology
2.1.6	Latin language
2.1.7	Immunology
2.2	**Course Units and Practical Sessions imposing the prior Proficiency:**
2.2.1	General surgery
2.2.2	Hygiene
2.2.3	obstetrics and gynecology
2.2.4	Occupational diseases
2.2.5	Faculty Pediatrics
2.2.6	Epidemiology
2.2.7	Urology
2.2.8	Pediatric surgery
2.2.9	infectious diseases
2.2.10	Ophthalmology
2.2.11	Dentistry
2.2.12	Dermatovenereology
2.2.13	Infectious diseases in children
2.2.14	Otorhinolaryngology
2.2.15	Hospital Pediatrics
2.2.16	Phthisiology
2.2.17	Outpatient and emergency pediatrics

3. STUDENTS' COMPETENCIES FORMED AS A RESULT OF MASTERING THE DISCIPLINE (MODULE)	
PC-1: Able and ready to implement a set of measures aimed at maintaining and strengthening health and including the formation of a healthy lifestyle, prevention of the occurrence and (or) spread of diseases, their early diagnosis, identification of the causes and conditionsfor their occurrence and development, as well as aimed at eliminating harmful effects on human health of environmental factors.	
Know:	
Level 1	World order, the existence of the microworld, forms of symbiosis of different organisms, the influence of environmental factors on macroorganism, the role of microorganisms in the development of human
Level 2	Features of the formation of the processes of symbiosis of the human body with microbes, the role of the resident microflora of the body in the development of opportunistic diseases; the role of individual representatives of the microbial world in the etiology and pathogenesis of the most common human infectious diseases, their sensitivity to antimicrobial drugs Features of the formation of the processes of symbiosis of the human body with microbes, the role of the resident microflora of the body in the development of opportunistic diseases; the role of individual representatives of the microbial world in the etiology and pathogenesis of the most common human infectious diseases, their sensitivity to antimicrobial drugs
Level 3	Pathogenic and virulent properties of microbes and their role in the pathogenesis of an infectious disease. The role of opportunistic microflora in human pathology and in the development of nosocomial and iatrogenic diseases.
Ability:	

Level 1	Solve typical tasks for the formation of a healthy lifestyle (such as: wash hands before eating, brush your teeth, follow the rules of personal hygiene, etc.), draw and distinguish between prokaryotes and eukaryotes
Level 2	To substantiate, from a microbiological standpoint, the choice of material and methods of microbiological research in the diagnosis, differentiation and identification of pathogens of infectious and opportunistic diseases, as well as the tactics of prescribing specific drugs for treatment and prevention
Level 3	Take material (sputum, pus, blood, smear from plaque, gum pocket, from the root of the tongue, pharynx, etc.) for bacteriological, virological, serological examination; isolate a pure culture of the infectious agent, differentiate and identify
Skills:	
Level 1	Information about the unified laws of the development of living beings of the macro- and microworld, the unified structure of the carrier of genetic information, about variability and evolution
Level 2	Basic skills in working with material containing pathogenic and opportunistic microorganisms and methods of decontamination
Level 3	Knowledge to solve complex problems in emergency situations (during an outbreak of infection, food poisoning, an epidemic, a particularly dangerous infection, the use of bacteriological weapons) in order to quickly localize the infection, organize quarantine measures, decontaminate infected material, and carry out preventive procedures

The student should know as a result of mastering the discipline:	
3.1	**Know:**
3.1.1	Know (i.e. reproduce and explain educational material with the required degree of scientific accuracy and completeness): The main stages in the development of microbiology. Communication of science with other disciplines, tasks and methods of research, the principle of taxonomy of microorganisms. The structure and shape of a microbial cell with the function of various formations, their chemical composition, physiology, biochemistry of bacteria, features of nutrition, respiration, growth, reproduction. Distribution and role of microbes in the environment. Influence of environmental factors on microorganisms. Morphology, ultrastructure, classification and nature of viruses. Features of replication of DNA and RNA genomic viruses, their cultivation, antigens, production and use of phages. Nature of prions and features of prion diseases. Features of the genetics of bacteria and viruses. The role of mutations, recombinations in the evolution of bacteria. Extrachromosomal factors of heredity. The concept of genetic engineering, practical application. Sources and methods for obtaining antibiotics, their classification by structure, spectrum and mechanism of action. Features of genetic control of pathogenicity and antibiotic resistance of microbes, mechanisms of resistance development. Complications in antibiotic therapy, methods for determining the sensitivity of microbes to antibiotics. Features of the formation of the processes of symbiosis of the human body with microbes, the role
3.1.2	The mechanism and factors of the development of the infectious process. Pathogenicity and virulence of microbes. The role of conditionally pathogenic microflora in human pathology, the development of nosocomial infections. Formation of immunity, its types, mechanisms and factors: immunocompetent cells, their interaction in cellular and humoral immunity. Antigens of microbes and viruses, their properties, types. Mechanisms of interaction between antigens and antibodies. Mechanisms of development of allergy of immediate and delayed types, forms of manifestation, and preventive measures. The role of individual representatives of the microbial world in the etiology and pathogenesis of major human infectious diseases. Methods of microbiological diagnostics. How to take material (sputum, pus, blood, urine, feces, swab from the throat, hands, environmental objects, etc.) for bacteriological, virological and serological studies in children. The use of basic antibacterial, antiviral and specific drugs. Vaccines, their types; immune diagnostic and therapeutic preparations. Principles of
3.2	**Ability:**
3.2.1	Be able to (i.e. solve typical problems based on the reproduction of standard solution algorithms): Observe the rules of the sanitary-hygienic and anti-epidemic regime in the bacteriological laboratory.
3.2.2	Justify from microbiological positions the choice of material for research in the diagnosis of infectious and opportunistic diseases. Observe safety precautions and rules for working with material that poses a biological hazard. Prepare preparations for microscopy from the test material (pus, sputum, blood, etc.) and a pure culture of microbes. Stain smears with simple and complex methods (according to Gram, Ziehl-Nielsen, Neisser, Gins, Romanovsky-Giemsa, etc.). Set up and work with phase-contrast, luminescent and dark-field microscopes. Prepare basic nutrient media for the cultivation of microorganisms. Inoculate the test material on liquid and solid nutrient media. Select a pure culture of microbes - aerobes and obligate anaerobes. To identify the isolated pure culture of bacteria by morphological, tinctorial, cultural, biochemical and antigenic properties. Determine phage sensitivity and phage type of bacterial culture. To study the sensitivity of bacteria to antibiotics. Work with laboratory animals: fix, infect in various ways, take blood, perform an autopsy of the corpse of an animal, make
3.2.3	Imprints of organs, blood cultures. To cultivate obligate intracellular parasites, prepare a cell culture (primary trypsinized single-layer from chicken embryos and transplanted). Infect cell culture and chick embryo. Carry out the indication and identification of viruses in cell culture and on the chick embryo. Use the acquired knowledge to determine the tactics of antibacterial, antiviral and immunotropic therapy; apply the principles of emergency prevention and antitoxic therapy of patients.

3.3	**Skills:**
3.3.1	The student can demonstrate the ability to solve complex problems based on the acquired knowledge, skills and abilities, with their application in atypical situations, i.e. owns: The main methods 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 a laboratory microbiological examination of the adult population and adolescents. The methodology for interpreting the results of microbiological research, determining the antimicrobial activity of antibiotic drugs and microbiologically substantiated rules for their use for the treatment of patients. Basic skills of working with material containing pathogenic and opportunistic microorganisms. Methods of selection of antimicrobial and immunobiological drugs for adequate prevention and treatment of infectious diseases. Basic skills in working with modern devices used to diagnose infectious diseases.

4. COURSE (MODULE) STRUCTURE AND CONTENT								
Activity code	**Name of sections and topics/ type of occupation/**	**Semester /Academic Year**	**Hours**	**Competencies**	**Literature**	**Interact**	**other training**	**Notes**
Section 1.	**The morphology of micro-organisms. Microscopic methods of research.**							
1.1	Morphology, structure of a bacterial cell, chemical composition and functional role of its constituent components in the process of vital activity. /Lec/	3	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
1.2	The subject and tasks of medical microbiology. Basics of safety in microbiological laboratory. Microscopes: biological, phase - contrast, luminescent, electronic. Microscopy technique. Principles of taxonomy and nomenclature of bacteria /Pr/	3	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			Studying according to the tables of the device of microscopes: biological, luminescent, phase-contrast, electronic. Study of the scheme of the path of rays of the dry and immersion systems of the microscope. The study of the principle of operation of the phase-contrast prefix.
1.3.	The subject and tasks of medical microbiology in their historical development. Modern aspects of its development, connection with other disciplines, signifycance in the practice of a doctor. Principles of taxonomy and nomenclature of bacteria / /SSW /	3	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
1.4	Basic forms of bacteria. Smear preparation. An easy way to color. Burri smear preparation. /Pr/	3	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.4 Э1 Э2 Э3 Э4 Э5 Э6	1		Microscopy of coccoid, rod-shaped and convoluted forms of bacteria. Preparation of a preparation from dental plaque according to Burri.
1.5	Complex staining methods: according to Gram, Ziehl-Nielsen. Acid resistant microbes. Sporulation. Spore coloration. /Pr/	3	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.2 Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.4 Э1 Э2 Э3 Э4 Э5 Э6	1		Staining of smears according to Gram, Ziehl- Nielsen, Ozheshko.

1.6	Morphology of actinomycetes, spirochetes, rickettsiae, mycoplasmas, chlamydia, their biological features and role in human pathology. /Lec/	3	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.2 Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
1.7	The structure of a microbial cell. Capsule, detection methods. Volutin grains, their color. Microbial mobility. Methods for studying mobility. Ultramicroscope. /Pr/	3	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.4 Э1 Э2 Э3 Э4 Э5 Э6	0,3		Staining of smears according to Leffler, Neisser, Burri-Gins. Preparation of the drug «crushed and hanging drop». Phase-contrast microscopy of preparations.
1.8	Control No. 1 /Пр/	3	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
1.9	Modern methods of Express-diagnostics in medical Microbiology /SSW/ /Ср/	3	1	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
Section 2.	**Physiology of**							
2.1	Physiology and biochemistry of bacteria. Nutrition. Sources of carbon and types of nutrition ofbacteria. Autotrophs, heterotrophs, prototrophs, auxotrophs. Growth factors. Nutrient media. Transport of nutrients into the cell. Bacterial enzymes, classification, significance. Biosynthesis of carbohydrates and proteins. Determination of saccharolytic, proteolytic and pathogenicity enzymes./Lec/	3	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
2.2	Sterilization and disinfection. Nutrition of bacteria. Classification of bacteria by types of food. Nutrient media, their classification, the principle of preparation of simple media MPA, MPB. /Pr/	3	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			Familiarization with the equip-ment, methods and mode of sterilization, sterility control. Reading a text-book, working with lecture notes.

2.3	Energy exchange (biological oxidation). Breath types. Aerobes. Anaerobes. Methods for creating anaero bic conditions. Pigments. Growth and reproduction of bacteria on dense nutrient media – colonies, their characteristics, significance; on liquid ones, the phases of development of the bacterial population. Princip les of cultivation, pure culture isolation and identification. Microflora of soil, water, air, human body. /SSW/	3	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
2.4	Reproduction of microbes. Technique of sowing and cultivation of microbes. Breath of bacteria. Methods for isolating a pure culture of aerobes and anaerobes. Colony count. The principle of operation of the thermostat. /Pr/	3	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.1 Л2.3 Л2.8 Л2.9 Л2.10 Л2.12Л3.1 Л3.4 Э1	0,7		Reading a textbook, additionally th literature. Work with lecture notes. The characteristics and searches the colonies. To make the scheme of a phase of reproduction of microbes.
2.5	Microbiological and molecular biological bases of chemotherapy. The main groups of antimicrobial chemotherapy drugs. Antibiotics. Sources and methods of obtaining. Classification by chemical structure, spectrum and mechanism of action. Complications with antibiotic therapy. Mechanisms of formation of drug resistance	3	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
2.6	Differentiation and identification of microbes. Enzymes of microbes, their classification. Practical significance and study of the biochemical activity of microbes. Hiss color series, Endo medium. Pigments of bacteria, their significance. Antibiotics: concept, classification, mechanisms of action on microbes, side effects on the macroorganism. Determination of the sensitivity of microbes to antibiotics. Mechanisms of	3	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			Seeding a pure culture on the medium bundle branch block, Endo. Accounting proteolytic activity, pigmentirovanie bacteria. Reading a textbook, additional literature. Work with lecture notes.

2.7	Influence of environmental factors on microorganisms. The prevalence and role of microbes in the environment. The cycle of matter in nature. Of Microflora soil, water, air, food products. The microflora of the human body in the age	3	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
2.8	Ways to overcome drug resistance in microbes. Restrictions on the use of drugs in pregnant women and children. /SSW/.	3	1	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			Cell culture, types. The algorithm for preparation of cell cultures before infection, CPE, hemadsor- ption. Indication by the color sam- ple. Phages cura- tive, diagnostic
2.9.	The microflora of the human body throughout life and its role in normal physiological processes and in pathology. /SSW/	3	1	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
2.10.	Colloquium №1. /Pr/	3	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6	2.8	Colloquium №1. /Pr/	3
Section 3.	**General virology and Genetics of microorganisms.**							
3.1	Structure, chemical composition and classification of viruses. Reproduction of viruses. The interaction of viruses with a cell of a macroorganism is the stage of a productive, integrative, abortive form of a cellular infection. Defective viruses. Cultivation and indication of viruses. Bacterial viruses, structu- re. Features of the interaction of phages with a bacterial cell. Lysogeny. Practical application of bacteriophages. /Lec/.	3	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			

3.2	Morphology of viruses, virological research methods. The structure of the chick embryo. Tissue culture, classification, methods of tissue culture preparation. Methods of cultivation and indication of viruses. Viruses of bacteria- phages, nature, structure, properties. Practical application of bacteriophages. /Pr/. /Пр/	3	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			Cell culture, types. Cell culture preparation algorithm. Microscopy: cell cultures before infection, CPD, hemadsorption. Color test indication. Phages are medical, diagnostic. Accounting for phage lizability in bacterial culture.
3.3.	Organization of genetic material in bacteria. Genotype, phenotype of bacteria. Extrachromosomal factors of heredity. Modifications. Mutations. Genetic recombination. Virus genetics. The practical significance of the doctrine of the genetics of microorganisms and genetic engineering in medical microbiology /Lec/.	3	2	ПК-1	Л1.1 Л1.2 Л1.3Л3.1 Л2.8 Л2.10 Л3.4 Л2.12 Л2.13Л3.2 Л3.3 Э1 Э2 Э3 Э4 Э5 Э6			
3.4.	Genetics of microorganisms. The organization of the genetic apparatus in bacteria and viruses. Modifications, mutations, dissociations. Recombination in bacteria: transformation, conjugation, transduction. Identification of nucleic acids. Polymerase-chain reaction. /Pr/.	3	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.12 Л2.13Л3.1 Л3.3 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6	1		Genetics of microorganisms. The organization of the genetic apparatus in bacteria and viruses. Modifications, mutations, dissociations. Recombination in bacteria: transformation, conjugation, transduction. Identification of nucleic acids. Polymerase-chain reaction.
3.5.	Obtaining autovaccines, bacteriophages, mycophages using Biotechnology. /SSW/.	3	1	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			

3.6.	Genetic engineering and application of its achievements in human life and medical microbiology /SSW/.	3	1	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
Section 4.	**Infectious process.**							
4.1.	Infection, infectious process, infectious disease. Pathogenicity and virulence of microbes. Virulence units. Toxins. Enzymes of pathogenicity. Experimental technique. Immunity. Non-specific and specific protective factors. /Pr/.	3	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			Determination of lecithinase, plasmacoagulase, hemolysin, hyaluronidase, exotoxin. Methods of infection of laboratory animals, bacteriological examination of animal corpses.
4.2.	The concept of infection, infectious process, infectious disease. Pathogenicity and viru- lence of microbes, pathogenicity factors. Toxins. Enzymes of pathogenicity. Forms of infection. The role of conditionally pathogenic microflora in human pathology. /SSW/.	3	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
4.3	Factors and mechanisms of nonspecific resistance to infection. External and internal barriers, cellular factors: phagocytosis, natural killers, cytotoxicity. Humoral - lysozyme, complement system, interferons, cytokines, acute phase proteins. The influence of environmental factors on the reactivity of the body /SSW/.	3	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
4.4	Types of symbioses between different organisms. /SSW/.	3	1	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
4.5	Features of antibacterial immunity. /SSW/.	3	1	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			

4.6	Features of antiviral immunity. /SSW/.	3	1	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
4.7	Features of antifungal immunity. /SSW/.	3	1	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
4.8	Features of antiparasitic immunity. /SSW/.	3	1	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
Section 5.	**Private medical bacteriology.**							
5.1	Pathogenic cocci - staphylococci, meningococci, gonococci. Classifications, morphology, biological properties. Diseases, pathogenesis, immunity. The role of streptococcus in the etiology of scarlet fever, erysipelas, rheumatism. Principles of laboratory diagnostics, treatment and prevention. /Lec/.	3	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			

5.2	Microbiological diagnosis of diseases caused by streptococcus, pneumococcus, gonococci. Preparations for etiotropic and specific therapy, general and specific prevention of this pathology. /Pr/.	3	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			Reading a textbook, additional literature. Working with lecture notes. Draw up a scheme of microbiological diagnostics staphylococcal and streptococcal infections. Inoculate pus on blood agar and JSA. Isolate a pure culture, identify by morphological, biochemical, toxigenic and antigenic properties.
5.3	Causative agents of meningococcal and gonococcal infections. The causative agents of non-gonococcal urethritis are chlamydia, mycoplasmas. Morphology, cultural and pathogenic properties. Principles of laboratory diagnostics, treatment and prevention. /SWW/.	3	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
5.4	Microbiological diagnosis of meningococcal, gonococcal infections. Non-gonococcal urethritis caused by chlamydia and mycoplasmas. Preparations for etiotropic and specific therapy, general and specific prevention of this pathology. /Pr/.	3	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
5.5	The causative agents of diphtheria, whooping cough. Morphology, cultural and pathogenic properties. Principles of laboratory diagnostics, treatment and prevention. /Lec/.	3	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
5.6	Mycobacteria - causative agents of tuberculosis, leprosy. Actinomycetes. Morphology, cultural and pathogenic properties. Role in human pathology. Principles of laboratory diagnostics, treatment and prevention. /SWW/.	3	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			

5.7	Microbiological diagnosis of diphtheria and tuberculosis, whooping cough, parapertussis. Preparations for etiotropic and specific therapy, general and specific prevention of this pathology. / Pr /.	3	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			Reading a textbook, additional literature. Working with lecture notes. Draw up a scheme for micro biological diagnosis of diphtheria, whooping cough and parapertussis.Perform inoculations on the appropriate media for each pathogen. Isolate a pure culture and identify by morphological, biochemical and antigenic properties. Set up a precipitation reaction to determine the toxigenicity of diphtheria bacillus.
5.8	Microbiological diagnosis of tuberculosis, leprosy, actinomycosis. Preparations for etiotropic and specific therapy, general and specific prevention of this pathology. /Pr/.	3	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			Reading a textbook, additional literature. Working with lecture notes. Make schemes of microbiological diagnostics of tuberculosis, leprosy, actinomycosis. Prepare a sputum smear and stain with Ziehl-Neelsen. Microscopically, sketch the preparation.Take into account the nature of growth on the appropriate nutrient media of pathogens of tuberculosis and actinomycosis. Select drugs for specific therapy and prevention.

5.9	The causative agents of mycoses: superficial, subcutaneous, deep, opportunistic (candidiasis, zygomycosis, aspergillosis, penicilliosis, fusarium). /SWW/.	3	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
5.10	Morphology of mushrooms. Classification. The meaning of mushrooms. The role of fungi in human pathology - mycoses. Causative agents and laboratory diagnosis of opportunistic mycoses - candidiasis, aspergillosis, penicillosis. Preparations for etiotropic and specific therapy, general and specific prevention of this pathology. /Pr/.	3	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			Reading a text-book, additional literature. Working with lecture notes. To draw up schemes of microbiolo-gical diagnostics of candidiasis. Prepare a native preparation from the test material, microscope and sketch. To study the colonies of various types of Candida fungi and the nature of pseudomyceliu m on nutrient media.
5.11	Colloquium №2. /Pr/.	3	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
5.12	Classification of the family Enterobacteriaceae. The causative agents of intestinal infections are Escherichia coli and Shigella. Morphology, cultural and pathogenic properties. Role in human pathology. Principles of laboratory diagnostics, treatment and prevention. /Lec/.	3	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			

5.13	Microbiological diagnosis of colienteritis and dysentery. Preparations for etiotropic and specific therapy, general and specific prevention of this pathology. /Pr/.	4	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6	1		Reading a text-book, additional literature. Working with lecture notes. Make schemes of micro biological diagnostics of coli-infections dysentery. Inoculate a suspension of feces on the surface of the Endo medium in a Petri dish. An isolated colorless colony on Endo's medi- um, transfer to Ressel's medium. Identify by morphological,biochemical and antigenic properties. Inoculate the washout from the student's hands on Kessler's medium.
5.14	Causative agents of typhoid, paratyphoid A and B. Causative agents of salmonellosis - food poisoning. Causative agents of cholera. Morphology, cultural and pathogenic properties, epidemiological features. Role in human pathology. Principles of laboratory diagnostics, treatment and prevention. /SWW/.	3	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			

5.15	Microbiological diagnosis of typhoid fever, paratyphoid fever and food poisoning. Preparations for etiotropic and specific therapy, general and specific prevention of this pathology. /Pr/.	4	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6	1		Reading a text-book, additional literature. Wor-king with lecture notes. To draw up schemes of microbiological diagnostics of typhoid paratyphoids and food toxic infections. To identify a pure culture of Salmonella by carbohydrate and protein metabolism on Hiss and MPB media. Take into account the results of agglutination reactions in order to determine antibodies in the patient's blood serum (Vidal reaction) and determine the type of Salmonella.Take into account previous crops flushed from the hands.
5.16	Microbiological diagnosis of cholera. Preparations for etiotropic and specific therapy, general and specific prevention of this pathology. Control No№2 /Pr/.	4	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э4 Э5 Э6			Reading a text-book, additional literature. Wor-king with lecture notes. To draw up Draw up a sche-me for microbio-logical diagnosis of cholera. To stu dy the morpho-logy, cultural bio chemical antigen-ic properties, phage typing of Vibrio cholerae using demonstr-ation materials.

5.17	The causative agents of anaerobic infections are clostridial gas gangrene, tetanus, botulism. Morphology, cultural and pathogenic properties, epidemiological features. Role in human pathology. Principles of laboratory diagnostics, treatment and prevention. /Lec/.	4	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
5.18	Microbiological diagnosis of botulism, tetanus, gas gangrene. Preparations for etiotropic and specific therapy, general and specific prevention of this pathology. /Pr/.	4	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			Reading a text-book, additional literature. Wor-king with lecture notes.To make schemes of micro biological resear-ches at anaerobic infections. Using demonstration materials, study the morphology, color, growth on nutrient media of pathogens of gas gangrene, botu-lism, tetanus. To study the scheme of setting up the reaction of toxin neutralization with antitoxic serum.
5.19	Causative agents of plague and brucellosis. Morphology, cultural and pathogenic properties, epidemiological features. role in human pathology. Principles of laboratory diagnostics, treatment and prevention. /Lec/.	4	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			

5.20	Microbiological diagnosis of plague, tularemia. Preparations for etiotropic and specific therapy, general and specific prevention of this pathology. /Pr/.	4	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.1 Л2.4 Л2.5 Л2.6 Л2.7 Л2.11Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			Reading a text-book, addition nal literature. Wor- king with lecture notes. To draw up Draw up a sche me for microio-logical diagnos nosis of plague and tularemia. To study and draw the morphology of plague and tularemia bacilli in prepared smears from organs and pure culture. To study the features of the mode of work with quarantine and especially dangerous infections.
5.21	Microbiological diagnosis of brucellosis, anthrax. Preparations for etiotropic and specific therapy, general and specific prevention of this pathology . /Pr/.	4	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6	1		Reading a text-book, additional literature. Wor-king with lecture notes. To draw up Draw up a sche-me for microbio-logical diagnosis of anthrax and brucellosis. Using finished preparations, study the morphology of anthrax bacilli in organs and in pure culture. Put the Ascoli reaction in order to determine the contamination of raw materials (skin, fur) with anthraxpathogens.

5.22	The causative agents of spirochetosis are syphilis, relapsing fever, leptospirosis. Morphology, cultural and pathogenic properties, epidemiological features. Role in human pathology. Principles of laboratory diagnostics, treatment and prevention /Lec/.	4	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.3 Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
5.23	Microbiological diagnosis of syphilis, epidemic whom and endemic relapsing fever, leptospirosis. Preparations for etiotropic and specific therapy, general and specific prevention of this pathology. /Pr/.	4	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			Reading a text-book, additional literature. Wor-king with lecture notes. To draw up Draw up micro-biological diagn-osis schemes for syphilis, relapsing fever, leptospirosis. Take into account the result of the Wasserman reaction. Set up a microprecipitati on reaction with cardiolipin anti-gen.Draw a table with the neces-sary and ingre-dients for setting up immobilizat-bilization and tre ponema reaction ns and immune-fluorescence. Microscopically and draw Borrelia in a smear from the blood of a patient with relapsing fever.
5.24	Rickettsia of epidemic and endemic typhus. Coxiella Q fever. Morphology, cultural and pathogenic properties, epidemiological features. role in human pathology. Principles of laboratory diagnostics, treatment and prevention. /Lec/.	4	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			

5.25	Microbiological diagnostics epidemic and endemic typhus, Q fever. Preparations for etiotropic and specific therapy, general and specific prevention of this pathology /Pr/.	4	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			Reading a textbook, additional literature. Working with lecture notes. Make schemes of bacteriological and serological diagnostics of rickettsiosis. Classification of rickettsia and rickettsiosis.
5.26	Colloquium №3. /Pr/.	4	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
5.27	Microbiological diagnosis of diseases caused by staphylococci. Specific prevention and treatment. /SSW/.	3	1	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
5.28	Lyell's syndrome. /SSW/.	3	0,7	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
5.29	Streptococci: pyogenic, pneumococci. The role of streptococci in the development of immune inflammation of the connective tissue, in the development of rheumatism. /SSW/.	3	1	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
5.30	Classification of mycobacteria, opportunistic mycobacteria. /SSW/.	3	1	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
5.31	Causative agents of keratomycosis (epidermophytosis, microsporia, trichophytosis), dermatomycosis - types, morphological and biological properties, diagnosis, treatment and prevention. /SSW/.	3	1	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			

5.32	Causative agents of subcutaneous mycoses (sporotrichosis, mycetoma), morphological and biological properties, diagnosis, treatment and prevention. /SSW/.	3	1	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
5.33	Causative agents of deep visceral mycoses (histoplasmosis, coccidioidomycosis, cryptococcosis), morphological and biological properties, diagnosis, treatment and prevention. /SSW/.	3	1	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
5.34	The role of Escherichia coli in normal and pathological conditions. Microbiological diagnosis of coli infections. Treatment, prevention. /SSW/.	3	1	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
5.35	Causative agents of campylo- and helicobacteria. Microbiological diagnostics. Treatment, prevention. /SSW/.	4	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
5.36	Pseudomonas aeruginosa. Microbiological diagnostics. Treatment, prevention. /SSW/.	4	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
5.37	Especially dangerous (EDI) and quarantine infections: characteristics, properties of microbes - criteria for selecting pathogens of especially dangerous infections, principles of diagnosis. Activities in the hotbed of EDI./SSW/	4	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
5.38	Modern classifications of rickettsia and rickettsiosis. Brill-Zinsser disease. /SSW/	4	1	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			

Section 6.	**Private Medical Virology.**							
6.1	ARVI viruses - influenza, parainfluenza, SARS, rhino-, corono-, RS-, adenoviruses. Viruses of measles, mumps. Morphology, antigens, cultivation, pathogenesis and clinical features. Principles of laboratory diagnostics, treatment and prevention. /Lec/.	4	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
6.2	Microbiological diagnostics infections caused by viruses influenza, parainfluenza, adenovirus, rhinovirus, coronavirus, RS virus, mumps viruses, Cory. Preparations for etiotropic and specific therapy, General and specific prevention of this pathologies. /Pr/ /Пр/	4	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			Reading a text-book, additional literature. Working with lecture notes.To make the scheme virological and serological diagnosis of acute respiratory diseases. To put the reaction of inhibition of hemagglutination HAI for the detection of anti-influenza antibodies with paired sera of patients with influenza.
6.3	Enteroviruses - poliomyelitis viruses, Coxsackie, ECHO. Hepatitis viruses A,E,B,C,D. Morphology, antigens, cultivation, pathogenesis and clinical features. Principles of laboratory diagnostics, treatment and prevention. /Lec/.	4	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
6.4	Microbiological diagnostics infections caused by viruses polio, Coxsackie, ECHO. Diagnosis of viral hepatitis A and E. Drugs for etiotropic and specific therapy, General and specific prevention of this pathologies. /Pr/ /Пр/	4	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			Reading a text-book, additional literature. Work with lecture notes. Take into account the reaction of biological neutralization of BNT in poliomyelitis
6.5	Viruses hepatitis A and E, b,C, and D. HIV – human immunodeficiency virus man's. Morphology, antigens, cultivation, features pathogenesis and clinics. Principles of laboratory diagnostics, treatment and prevention. /Lec/	4	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			

6.6	Microbiological diagnostics infections caused by viruses hepatitis B, C and d Delta virus. Microbiological diagnosis of HIV -infections. Preparations for the specific and specific therapies, General and specific prevention this pathology. /Pr/ /Пр/	4	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6	1		Reading a text-book, additional literature. Wor-king with lecture notes. Draw a sequence diagr-am of the formul- ation of ELISA to identify antigens in the blood ser-um of the patient with HIV infecti-on. To name the tests used for dif-ferential diagno-sis of parenteral hepatitis B,C,D
6.7	Arbo - and rhabdoviruses – encephalitis and hemorrhagic fever. Virus rabieses. Morphology, antigens, cultivation, features pathogenesis and clinics. Principles of laboratory diagnostics, treatment and	4	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
6.8	Microbiological diagnostics arbovirus infections – encephalitis, hemorrhagic fevers'. Microbiological diagnosis of rubella, rabies. Preparations for etiotropic and specific therapy, General and specific prevention of this pathologies. /Pr/	4	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			Reading a text-book, additional literature. Wor-king with lecture notes.To make schemes of virological, serological, biological diagnostics of viral encephalitis and hemorrhagic fever. Draw Taurus Babesh-Negri in smears of prints and histological sections of the brain.
6.9	The viruses of the Herpesviridae family – viruses of herpes, chickenpox, cytomegalovirus. Morphology, antigens, cultivation, peculiarities of pathogenesis and clinic.Principles of laboratory diagnostics, treatment and prevention. Viruses of slow infections. Prions and prion diseases. Oncogenic viruses. /Lec/	4	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			

6.10	Microbiological diagnostics herpesvirus infections and smallpox. Preparations for the specific and specific therapies. General and specific prevention this pathology./Pr/	4	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6	1		Reading a text-book, additional literature. Wor-king with lecture notes.To make the scheme of microbiological diagnosis of herpes virus infections and smallpox. The classification features of the structural organization, properties of herpes viruses.
6.11	Slow viral and prion diseases. Causes and characteristics diseases. Principles of diagnosis, treatment, prevention. Oncogenic viruses - DNA and RNA-genomic, classification. Mechanism viral oncogenesis. /Pr/	4	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			Reading a textbook, additional literature. Work with lecture notes. To make the scheme of microbiological diagnosis
6.12	Protozoal infections: etiology, ways of infection transmission, mechanisms of disease development, methods of laboratory diagnostics. Principles of therapy and prevention of general and specific /Pr/	4	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			Reading a textbook, additional literature . Make an outline. Make schemes of microbiological diagnostics of protozoal infections.
6.13	Colloquium №4. /Pr/.	4	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
6.14	Nosocomial infections: etiology, ways of infection transmission, mechanisms of disease development, methods of laboratory diagnostics. Principles of therapy and prevention of general and specific / Pr /	4	3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			Reading a textbook, additional literature . Make an outline. Draw up schemes for microbiological diagnosis of nosocomial infections.
6.15	The virus of atypical pneumonia, role in human pathology. Laboratory diagnostics. Therapy and prevention /SSW/	4	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			7.15

6.16	The viruses of foot and mouth disease. Pathogenesis. Laboratory diagnostics. Therapy and prevention. /SSW/	4	1,7	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			7.16
6.17	The principles of therapy and prevention HIV infection and AIDS. Hardship development of drugs for treatment and preventions. Congenital HIV-infection. /SSW/	4	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			7.17
6.18	Ebola virus. Pathogenesis. Laboratory diagnostics. Therapy and prevention. /SSW/ /Ср/	4	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
6.19	HTLV – human T-lymphotropic viruses. Pathogenesis. Laboratory diagnostics. Therapy and prevention /SSW/	4	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
6.20	Toxoplasms. Views. Pathogenesis diseases. Diagnostics. Therapy and prevention. Teratogenic effect germs on the fruit. /SSW/	4	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
6.21	The malaria Plasmodium. Views. Cycles developments. Pathogenesis. Diagnostics. Therapy and prevention. /SSW/	4	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
6.22	Leishmaniasis. Views. Pathogenesis diseases. Diagnostics. Therapy and prevention /SSW/	4	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
6.23	Lamblias. Pathogenesis. Diagnostics. Therapy and prevention /SSW/	4	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			

6.24	Amoebae. Views. Pathogenesis. Diagnostics. Therapy and prevention. /SSW/	4	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
6.25	Trichomonas. Views. Pathogenesis diseases. Diagnostics. Therapy and prevention. /SSW/	4	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
6.26	Dysbacteriosis. Factors affecting its formation. Diagnostics. Treatment and prevention /SSW/ /Ср/	4	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
6.27	Opportunistic infection: etiological factor, the mechanism development of the disease, diagnosis, principles of treatment and preventions. /SSW/ /Ср/	4	2,3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
6.28	Features antiviral immunity's. Development challenges antiviral drugs therapies. /SSW/	4	2	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
6.29	Contact work during the period of theoretical training /CwTt/ /КрТО/	3	0,3	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
6.30	Contact work during the examination session /CwEs/ /КрЭк/	4	0,5	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			
6.31	Hours for control /Exam/ /Экзамен/	4	35,5	ПК-1	Л1.1 Л1.2 Л1.3Л2.8 Л2.9 Л2.10 Л2.11 Л2.12 Л2.13Л3.1 Л3.4 Э1 Э2 Э3 Э4 Э5 Э6			

5. ASSESSMENT FUND

5.1. Advancement Questions and Assignments

QUESTIONS FOR CURRENT CONTROL of the level of training «KNOW, BE ABLE, OWN in APPENDIX» №1
CONTROL QUESTIONS AND TASKS FOR INTERIM CERTIFICATION:

3 semester
CONTROL №1
ON THE MORPHOLOGY OF BACTERIA CONTROL QUESTIONS

1. The subject and tasks of microbiology, the main stages in the development of microbiology. Researches of Samoilovich, Pasteur, Koch, Mechnikov, Ivanovsky, Zilber, Zdrodovsky, Ermolyeva, Erlich, Borde.
2. Systematics and nomenclature of bacteria. Basic principles of classification of microorganisms. The concept of genus, species, subspecies, serovar, chemovar, fagovar.
3. What do microbiological terms mean: population, clone, strain?
4. Microscopic research methods. Microscopes: biological, luminescent, phase-contrast, electronic, ultramicroscope – their device, principle of operation. Immersion system.
5. The main forms of prokaryotes are cocci, rods, convoluted, filamentous.
6. Stages of preparing a smear from a culture of bacteria, sputum, blood, pus.
7. Tinctorial properties and staining methods of microorganisms (simple and complex)
8. Preparation of a smear from plaque and stainibg according to Burri.
9. Structure of a prokaryotic cell. Structures required and optional (inclusions), value, functions.
10. Nuclear apparatus of bacteria, plasmids, their role, structure.
11. Features of the structure of the cell wall of gram-positive and gram-negative bacteria.
12. Mechanism and stages of Gram staining. What color are cocci, rods, convoluted forms painted in and why?
13. Protoplasts, spheroplasts, L-forms: formation conditions, significance.
14. Acid-resistant bacteria. The mechanism and stages of staining according to Ziehl-Neelsen. What causes bacteria acid resistance?
15. Capsule: structure, meaning, methods of detection. Draw bacteria that form a capsule constantly and only in the body.
16. Sporulation, conditions, stages. The difference between different types of spore-forming microbes. Spore detection, staining in a simple and complex way. Draw microbes that form spores.
17. Flagella in bacteria. Mobility and methods of study in preparations "crushed" and "hanging" drop. Draw the bacteria monotrichous, peritrichous, amphitrichous, lophotrichous.
18. Pili (fimbria), types, meaning.
19. Volyutin grains: composition, value, coloring according to Leffler and Neisser. draw microbe
20. Morphology, features of the structure and reproduction of actinomycetes, mycoplasmas, chlamydia, spirochetes, rickettsiae.

4 semester.

COLLOQUIUM №1

ON PHYSIOLOGY, GENERAL VIROLOGY AND GENETICS OF MICROBES

CONTROL QUESTION

1. Action of physical, chemical factors on microorganisms. The concept of sterilization, disinfection, disinsection, deratization, antisepsis and asepsis.
2. Sterilization methods (physical, chemical, mechanical, biological) equipment, mode, control.
3. Ecology of microbes. The role of microbes in the cycle of substances in nature.
4. Microflora of air, water, soil, human body.
5. The importance of normal microflora for the human body and the maturation of the immune system.
6. Dysbacteriosis, factors contributing to its development.
7. Principles of correction microflora in dysbacteriosis, eubiotic preparations used for recovery normal human microflora in dysbacteriosis.
8. Nutrition of bacteria, Mechanisms, classification of bacteria by types of nutrition.
9. Nutrient media, classification. nutrient requirements.
10. The principle of preparation of basic nutrient media.
11. Technique of sowing and reseeding of microbes.
12. Thermostat, thermostats. Principle of operation.
13. Temperature limits of growth: thermophiles, psychrophiles and mesophiles.
14. Growth and reproduction of bacteria. Phases of bacterial reproduction on liquid nutrient media. Microbial colonies, their characteristics, colony counting.
15. Breathing microbes. Classification of microbes by types of respiration: aerobes, obligate and facultative anaerobes, microaerophiles, aerotolerants.
16. Methods for isolating pure cultures of aerobes: mechanical, physical, chemical, biological.
17. Methods for creating anaerobic conditions.
18. Bacterial enzymes. Their classification. Enzymatic activity of microbes and its use for identification bacteria.
19. Corbohydrate metabolism in bacteria, its significance. Environments of Giss, Endo, Levin, Ploskirev, Ressel, etc. for bacterial differentiation.
20. Protein metabolism in bacteria, its study and significance for bacterial differentiation.
21. Pigments of bacteria, their role, conditions of formation, classification.
22. Viruses. Classification, structure size.
23. Signs of the uniqueness of viruses, their difference from bacteria.
24. Types of interaction of the virus with the cell: infection, integration, virogeny.
25. Types of tissue cultures of cells, classification. Methods for preparing and growing cell cultures.
26. Cultivation of viruses and methods of their indication on the chick embryo and in cell culture.
27. Bacteriophages: virulent, moderate, prophages, defective. Structure, interaction with a bacterial cell, roperties, obtaining. application, obtaining.
28. Bacterial genetics. Genotype and phenotype. Types of variability: phenotypic and genotypic. Modifications dissociation, mutation. Classification of mutations by origin, by mechanism.
29. Physical, chemical, biological mutagens.
30. Genetic recombinations: transformation, transduction, conjugation.
31. Plasmids. Their properties and functions.
32. Movable genetic elements: transposons, Is-sequences and their role.
33. The concept of genetic engineering and biotechnology.
34. Molecular genetic research method – PCR. The principle of setting, practical significance.
35. Microbial antagonism.
36. Antibiotics, sources of their production.
37. Classification of antibiotics by origin, mechanism and spectrum of action.
38. Principles of rational antibiotic therapy, possible complications, side effects.
39. Main mechanisms of formation of microbial resistance to antibiotics and preventive measures.
40. Methods for determining the sensitivity of bacteria to antibiotics.

COLLOQUIUM No. 2
FOR INFECTION, COCCIAL AND AIR DROPLET INFECTIONS
CONTROL QUESTIONS

1. The concept of infection and the infectious process. Conditions for the occurrence of an infectious process.
2. Stages of development and characteristic signs of an infectious disease.
3. Forms of infections. The concept of bacteremia, toxinemia, sepsis, septicopyemia.
4. Pathogenicity and virulence of bacteria. Pathogenicity factors. Units of measurement of bacterial virulence.
5. Toxins of bacteria, their nature, properties, obtaining.
6. Anatoxins. Receipt. Titration. Application.
7. The role of the environment and the social factor in the development of the infectious process.
8. Staphylococci. Taxonomy. Characteristic. Sources, ways of transmission of infection. Pathogenesis. Microbiological diagnosis of diseases caused by staphylococci. Specific prevention and treatment.
9. Streptococci. Taxonomy. Characteristic. Sources, ways of transmission of infection. Pathogenesis. Microbiological diagnosis of streptococcal infections. Treatment and prevention.
10. Pneumococci. Taxonomy. Characteristic. Sources, ways of transmission of infection. Pathogenesis. Forms of infection. Microbiological diagnostics. Treatment and prevention.
11. Meningococci. Taxonomy. Characteristic. Forms of infection. Microbiological diagnostics. Treatment and prevention.
12. Gonococci. Taxonomy. Characteristic. Sources, ways of transmission of infection. Pathogenesis. Microbiological diagnostics of gonorrhea, blennorrhea. Treatment and prevention.
13. Gardnerella. Morphological, biological properties: Laboratory diagnostics. Treatment and prevention.
14. Chlamydia, their biological properties, cultivation, role in human pathology, principles of laboratory diagnosis of diseases, treatment, prevention.
15. Mycoplasmas, their biological properties, cultivation, role in human pathology, principles of laboratory diagnosis of diseases, treatment, prevention.
16. Pathogens of diphtheria. Taxonomy. Characteristic. Sources, ways of transmission of infection. Pathogenesis. Conditionally pathogenic corynebacteria. Microbiological diagnosis of diphtheria. Detection of antitoxic immunity.
17. Pneumococci. Taxonomy. Characteristic. Sources, ways of transmission of infection. Pathogenesis. Forms of infection.
Microbiological diagnostics. Treatment and prevention.
18. Tuberculosis pathogens, classification of mycobacteria. Taxonomy. Characteristic Sources, transmission routes infections.
Pathogenesis. Microbiological diagnosis of tuberculosis. Specific prevention and treatment.
19. Mycobacterium leprosy. Taxonomy. Characteristic. Sources, ways of transmission of infection. Pathogenesis. Forms of infection. Microbiological diagnostics. Treatment and prevention.
20. Actinomycetes. Taxonomy. Characteristic. Sources, ways of transmission of infection. Pathogenesis. Microbiological diagnostics.
Specific prevention and treatment.

IV SEMESTER
CONTROL NUMBER 2
ON INTESTINAL INFECTIONS
CONTROL QUESTIONS

1. Causative agents of coli infections. Taxonomy. Characteristic. The role of Escherichia coli in normal and pathological conditions. Sources infections, transmission routes. Pathogenesis. Microbiological diagnosis of coli infections. Treatment, prevention.
2. Pathogens of shigellosis. Taxonomy. Characteristic. Sources of infection, transmission routes, pathogenesis. Microbiological diagnostics. Specific prevention and treatment.
3. Causative agents of typhoid and paratyphoid. Taxonomy and characteristics. Sources of infection, routes of transmission, pathogenesis. Microbiological diagnostics. Specific prevention and treatment.
4. Pathogens of salmonellosis. Taxonomy. Characteristic. Sources of infection, transmission routes, pathogenesis. Microbiological diagnosis of salmonellosis. Treatment, prevention.
5. Causative agents of cholera. Taxonomy. Characteristic. Sources of infection, transmission routes, pathogenesis. Microbiological diagnostics, treatment, prevention.
6. Causative agents of intestinal yersiniosis. Taxonomy. Characteristic. Sources of infection, transmission routes, pathogenesis. Microbiological diagnostics. Treatment, prevention.
7. Causative agents of proteus infection. Taxonomy. Characteristic. Sources of infection, transmission routes, pathogenesis. Microbiological diagnostics. Treatment, prevention.
8. Causative agents of Klebsiella infection. Taxonomy. Characteristic. Sources of infection, transmission routes, pathogenesis. Microbiological diagnostics. Treatment, prevention.
9. Pseudomonas aeruginosa infection. Taxonomy. Characteristic. Sources infections, transmission routes, pathogenesis. Microbiological diagnostics. Treatment, prevention.
10. Campylobacter. Taxonomy. Characteristic. Sources of infection, transmission routes, pathogenesis. Microbiological enteritis diagnosis. Treatment, prevention.
11. Helicobacteria. Taxonomy. Characteristic. Sources of infection, transmission routes, pathogenesis. Microbiological diagnosis of gastric and duodenal ulcers. Treatment, prevention.

COLLOQUIUM No.3
ON ANAEROBIC, ZONONOSIS, SPIROCHETOSIS, RICKETTSIOSIC INFECTIONS
CONTROL QUESTIONS

1. Causative agents of anaerobic gas infection. Taxonomy. Characteristic. Sources of the route of transmission of infection, pathogenesis of the disease. Microbiological diagnostics. Specific prevention and treatment.
2. The causative agents of tetanus. Taxonomy. Characteristic. Sources of the route of transmission of infection, the pathogenesis of the disease. Microbiological diagnostics and treatmen.
3. Causative agents of botulism. Taxonomy. Characteristic. Sources of the route of transmission of infection, the pathogenesis of the disease. Microbiological diagnostics. Specific prevention and treatment.
4. Plague pathogens. Taxonomy. Characteristic. Sources of the route of transmission of infection, the pathogenesis of the disease. Microbiological diagnostics. Specific prevention and treatment.
5. Tularemia pathogens. Taxonomy. Characteristic. Sources of the route of transmission of infection, the pathogenesis of the disease. Microbiological diagnostics. Specific prevention and treatment.
6. Pathogens of anthrax. Taxonomy. Characteristic. Sources of the route of transmission of infection, the pathogenesis of the disease. Microbiological diagnostics. Specific prevention and treatment.
7. Causative agents of brucellosis. Taxonomy. Characteristic. Sources of the route of transmission of infection, the pathogenesis of the disease. Microbiological diagnostics. Specific prevention and treatment.
8. Features of microbiological diagnostics in quarantine infections. Express diagnostics.
9. Causative agents of syphilis. Taxonomy. Characteristic. Sources of the route of transmission of infection, the pathogenesis of the disease. Microbiological diagnostics. Treatment and prevention.
10. Pathogens of epidemic and endemic relapsing fever, their properties, characteristics. Disease pathogenesis, laboratory diagnostics, specific prevention and treatment.
11. Causative agents of leptospirosis. Taxonomy. Characteristic. Microbiological diagnostics. Treatment and prevention.
12. Pathogens of epidemic and endemic typhus. Taxonomy. Characteristics, pathogenesis of diseases. Brill-Zinsser disease. Microbiological diagnostics. Specific prevention and treatment.
13. The causative agent of Q fever. Taxonomy. Characteristic. Sources of the route of transmission of infection, the pathogenesis of the disease. Microbiological diagnostics, prevention and treatment.

COLLOQUIUM No.4
FOR VIRAL INFECTIONS
CONTROL QUESTIONS

1.The significance of the discovery of viruses by D.I. Ivanovsky. Stages of development of virology. The role of domestic scientists in the development virology.
2. ARVI pathogens. Taxonomy. Characteristic. Sources, ways of transmission of infection.
3. Influenza viruses. Taxonomy. Characteristic. Sources, ways of transmission of infection. The pathogenesis of the disease, clinical manifestations. Microbiological diagnostics. Specific prevention and treatment.
4. Parainfluenza viruses. Taxonomy. Characteristic. Sources, ways of transmission of infection. The pathogenesis of the disease clinical manifestations. Microbiological diagnostics. Specific prevention and treatment.
5. Measles virus. Taxonomy. Characteristic. Sources, ways of transmission of infection. The pathogenesis of the disease, clinical manifestations. Microbiological diagnostics. Specific prevention and treatment.
6. Parotitis virus. Taxonomy. Characteristic. Sources, ways of transmission of infection. The pathogenesis of the disease clinical manifestations. Microbiological diagnostics. Specific prevention and treatment.
7. Respiratory syncytial virus. Taxonomy. Characteristic. Sources, ways of transmission of infection. Pathogenesis diseases, clinical manifestations. Microbiological diagnostics, treatment, prevention.
8. Adenoviruses. Taxonomy. Characteristic. Sources, ways of transmission of infection. The pathogenesis of the disease, clinical manifestations. Microbiological diagnostics, treatment, prevention.
9. Coronaviruses. SARS virus - severe acute respiratory syndrome (SARS). Taxonomy. Characteristic. Sources, ways of transmission of infection. Microbiological diagnostics. Specific prevention and treatment.
10. Coxsackie enteroviruses, ECHO. Taxonomy. Characteristic. Sources, ways of transmission of infection. Pathogenesis diseases, clinical manifestations. Microbiological diagnostics. Specific prevention and treatment.
11. Poliomyelitis viruses. Taxonomy. Characteristic. Sources, ways of transmission of infection. The pathogenesis of the disease clinical manifestations. Microbiological diagnostics. Specific prevention and treatment.
12. Hepatitis viruses A, B, C, D, E. Taxonomy. Characteristic. Sources, ways of transmission of infection. Pathogenesis diseases, the main clinical manifestations. Microbiological diagnostics. Specific prevention, treatment.
13. Arboviruses. Taxonomy. Characteristic. Sources, ways of transmission of infection. The pathogenesis of diseases. Are common principles of microbiological diagnosis of arbovirus infections. Fundamentals of specific prevention and treatment.
14. Yellow fever viruses. Taxonomy. Characteristic. Sources, ways of transmission of infection. The pathogenesis of the disease. Microbiological diagnostics. Specific prevention and treatment.
15. Mosquito fever virus. Taxonomy. Characteristic. Sources, ways of transmission of infection. Pathogenesis diseases. Microbiological diagnostics. Specific prevention and treatment.
16. Dengue fever virus. Taxonomy. Characteristic. Sources, ways of transmission of infection. The pathogenesis of the disease. Microbiological diagnostics. Specific prevention and treatment.
17. Tick-borne, Japanese encephalitis viruses. Taxonomy. Characteristic. Sources, ways of transmission of infection. The pathogenesis of the disease. Microbiological diagnostics. Specific prevention and treatment.
18. Virus of Omsk hemorrhagic fever. Taxonomy. Characteristic. Sources, ways of transmission of infection. The pathogenesis of the disease. Microbiological diagnostics. Specific prevention and treatment.

19. Crimean hemorrhagic fever virus. Taxonomy. Characteristic. Sources, ways of transmission of infection. The pathogenesis of the disease. Microbiological diagnostics. Specific prevention and treatment.
20. Hemorrhagic fever virus with renal syndrome. Taxonomy. Characteristic. Sources, transmission routes infections. The pathogenesis of the disease. Microbiological diagnostics. Specific prevention and treatment.
21. Rabies virus. Taxonomy. Characteristic. Sources, ways of transmission of infection. The pathogenesis of the disease. Microbiological diagnostics. Specific prophylaxis.
22. Smallpox virus. Taxonomy. Characteristic. Sources, ways of transmission of infection. The pathogenesis of the disease. Microbiological diagnostics. Specific prevention of smallpox at the present stage.
23. Rubella virus. Taxonomy. Characteristic. Sources, ways of transmission of infection. The pathogenesis of the disease. Microbiological diagnostics. Specific prevention and treatment.
24. Herpes virus infection - herpes simplex virus 1, 2: taxonomy, characteristics of pathogens. Sources, paths transmission of infection. The pathogenesis of the disease. Microbiological diagnostics. pecific prevention and treatment.
25. Varicella zoster virus and shingles. Taxonomy. Characteristic. Sources, ways of transmission of infection. The pathogenesis of the disease. Microbiological diagnostics. Specific prevention and treatment.
26. Cytomegalovirus. Taxonomy. Characteristic. Sources, ways of transmission of infection. The pathogenesis of the disease. Microbiological diagnostics. Specific prevention and treatment.
27. Epstein-Barr virus. Taxonomy. Characteristics of pathogens. Sources, ways of transmission of infection. Pathogenesis s. Pathogenesis of diseases, main clinical manifestations. Microbiological diagnostics. Prevention and treatment.
28. HIV infection. Taxonomy, characteristics of the pathogen. Sources, ways of transmission of infection. Pathogenesis diseases, clinical manifestations. Microbiological diagnostics, prevention.
29. Classification and characteristics of oncogenic RNA and DNA viruses. The mechanism of oncogenesis.
30. Viruses of slow infections. Characteristics of pathogens. Mechanism of development and forms of manifestation. Principle laboratory diagnostics.
31. Prion diseases. Etiology, pathogenesis, forms of manifestation. Principles of treatment and prevention.

5.2. Course Papers Themes (projects)
the course work is not provided for by the discipline plan
5.3. Assessment Fund

EXAMPLES OF TEST TASKS

1.The shape of the bacterial cell is determined by the structure:
1.Cytoplasmic membrane 2.Capsid 3.Capsules 4.Disputes 5.Cell wall
2.Indication of viruses in laboratory animals:
1.Color sample 2.The formation of plaques 3.The characteristic clinic and the formation of intracellular inclusions 4.PCR 5.IFA
3.The presence of the cell wall determine:
1.Luminescent microscopy 2.Method "crushed drop" 3.Method " thick drop"
4.The ultracentrifuge forces 5.Plasmolysis
4.For the elective environments are:
1.Blood agar 2.Mastopathy agar 3.Yolk-salt agar 4.Mastopathy broth 5.Whey agar
5.Pathogenicity is the potential ability of microbes:
1.Shaping the immune system 2.To be lyzed by phages 3.To ferment the carbohydrates 4.To cause infection 5.Split proteins
6.Immuno-biological preparations for the creation of active artificial immunity:
1.Immunoglobulin 2.Hyperimmune serum 3.Vaccine 4.Adjuvants 5.Interferon
7.Meningococci are characterized by:
1.Mobility 2.The sporulation 3.Gram-positive colouring 4.Intracellular arrangement
5.Anaerobic type of respiration
8.To establish the source of nosocomial staphylococcal infection produce:
1.Isolation of Staphylococcus aureus from relatives 2.The phage typing 3.Determination of enzymatic activity
4.Determination of toxicity 5.Determination of pathogenicity enzymes
9.Signs of differentiation of conditionally pathogenic and enteropathogenic Escherichia:
1.Morphological features 2.Biochemical activity 3.Antigenic structure 4.Cultural properties
5.Type of gram staining
10.For the prevention of tetanus is investigated:
1.Suture and dressing material 2.Blood 3.The preserved products 4.Bowel movements 5.CSF
11.Specificity of interaction of the virus with the cell :
1.Connected with the symmetry of the virus 2.Depends on the number of capacitors 3.Related to complementarity of receptors 4.Depends on the type of nucleic acid 5.Linked to lack velocimetery systems
12. For emergency prevention of tick-borne encephalitis is used:
1.The serum 2.Killed vaccine 3.Immunoglobulin 4.Interferon 5.Antibiotics
13.Omsk hemorrhagic fever is an infection:
1.Intestinal 2.Natural step 3.Wound 4.Antropologia 5.Anthropozoonosis
14.What diseases are not marker manifestations of HIV infection:
1.Candidiasis of the esophagus 2.Kaposi's Sarcoma 3.Lymphadenopathy 4.Cytomeglovirus infection 5.Hemophilia
15. For the ELISA to detect antibodies against HIV antigens are used:
1.Isolated from the membranes of the chicken embryo 2.Obtained by hybridization 3.Adsorbed on solid-phase carrier 4.Suspended in physiological solution 5.Obtained with formalin and high temperatures

EXAMPLES OF SITUATIONAL TASKS

1. At the Institute of vaccines and sera it is necessary to obtain agglutinating polyvalent and monovalent abdominal sera. What is necessary for this? How to get agglutinating serum?
2. Delivered wound separated from the patient M., 23 years. Diagnosis: a Suspicion of anaerobic infection. When sowing material on the environment Kitt-Tarozzi marked turbidity and the turbulent gas environment. Describe the further course researches.
3. Child M., 6 months. Complaints (according to mother) to frequent regurgitation, vomiting, frequent loose stools, weight loss. When sowing feces on the Endo medium colonies planted red. On the Ressel medium-change the color of the entire medium,
the formation of gas. How should the analysis be continued? What kind of disease can be a speech?
4. Dedicated blood culture on the 8th day of replanting with liver broth liver agar. Colonies small, round, convex, colorless with mother-of-pearl hue. In a smear of colonies of small gram-negative rods. At identification of pure culture noted the following: a) growth with increased concentrations of carbon dioxide,
b) forms a hydrogen, C) grows on media with the addition of fuchsin and does not grow on media with thionine, d) licked phage TB, d) carbohydrates are not fermented,
e) agglutinated specific minoritarnymi serums. Make a conclusion on the results of the analysis.
5. Patient S.,27 years. Three days ago he returned from Omsk region,where he worked in logging. Complaints of fever with
chills, bleeding, hemorrhagic rash. What is your diagnosis supposed to be? What laboratory tests need to apply to clarify the diagnosis of the disease?

THEMES OF ABSTRACTS, REPORTS, ROUND TABLES:
Modern methods of rapid diagnostics in medical Microbiology.
Evolution of microbes.
Ways to overcome drug resistance in microbes.
Restrictions on the use of drugs in pregnant women and children.
Microflora of the human body throughout life and its role in normal physiological processes and in pathologies.
Microflora of air, water, soil and its impact on the human body.
Obtaining new antimicrobials by methods of genetic engineering.
Getting vaccines, bacteriophages, mycophages with the help of biotechnology.
Genetic engineering and application of its achievements in human life and medical Microbiology.
Types of symbioses between different organisms.
Features of antibacterial immunity.
Features of antiviral immunity.
Features of antifungal immunity.
Features of antiparasitic immunity.
Autoimmune disease.
Autoantigens.
The role of staphylococci in the development of generalized processes in children of the first year of life.
lyell syndrome.
The role of streptococci in the development of immune inflammation of the connective tissue, in the development of rheumatism.
Classification of mycobacteria.
Pathogens of keratomycosis (epidermophytosis, microsporia, trichophytosis). morphological and biological properties, diagnosis, treatment and prevention.
Pathogens of dermatomycosis-types, morphological and biological properties, diagnosis, treatment and prevention.
Pathogens of subcutaneous mycoses (sporotrichosis, mycetoma), morphological and biological properties, diagnostics, treatment and prevention.
The causative agents of visceral deep mycoses (histoplasmosis, coccidioidomycosis, crytococcosis), morphological and biological properties, diagnosis, treatment and prevention.
The role of E. coli in the pathology of children of the first year of life.
The role of Proteus and klebsiell in human pathology.
Especially dangerous (OOI) and quarantine infections: characteristics, properties of microbes – criteria for the selection of pathogens
highly dangerous infections, principles of diagnostics. Events in the focus of OOI.
The modern classification of rickettsiosis disease.
The virus of atypical pneumonia, role in human pathology. Laboratory diagnostics, therapy and prevention.
The viruses of foot and mouth disease. Pathogenesis. Laboratory diagnostics, therapy and prevention.
The principles of therapy and prevention of HIV infection and AIDS. Difficulties in the development of drugs for the treatment and
preventions. Congenital HIV infection.
ebola virus. Pathogenesis. Laboratory diagnostics. Therapy and prevention.
HTLV – human T-lymphotropic viruses. Pathogenesis. Laboratory diagnostics. Therapy and prevention.
Toxoplasms. Views. Pathogenesis. Diagnostics. Therapy and prevention. Teratogenic effect of microbes on fruit.
The malaria Plasmodium. Views. Development cycle. Pathogenesis. Diagnostics. Therapy and prevention.
Leishmanias. Views. Pathogenesis. Diagnostics. Therapy and prevention.
Lamblias. Pathogenesis. Diagnostics. Therapy and prevention.
Amoebae. Views. Pathogenesis. Diagnostics. Therapy and prevention.
Trichomonas. Views. Pathogenesis. Diagnostics. Therapy and prevention.
Dysbacteriosis. The factors influencing its formation. Diagnostics. Treatment and prevention.
Opportunistic infection: an etiological factor, the mechanism of disease development, diagnostics, principles of treatment and prevention.
Childhood viral infections. Features of antiviral immunity. Difficulties in the development of drugs for antiviral therapy.

5.4. List of types of evaluation tools

Test
Colloquium
Interview
Presentation report
SCALE OF EVALUATION TESTS
Section "" - 20 questions in the variant-the maximum number of 20 points;
correct answer to 1 question- 1 point:
19-20 points-5;
17-18 points-4;
14-16 points – 3.
Section "" - 15 questions in option -maximum 15 points;
the correct answer to 1 question – 1 point):
15 points – 5;
14 points – 4;
13 points– 3.
Section "" 10 questions in the variant-the maximum number of 10 points; correct answer to 1 question –1 point:
10 points-5;
8-9 points-4;
6-7 points– 3.
SCALE OF EVALUATION WORKSHOPS
Section – " - in the ticket 5 questions, 1 question-the maximum number of 5points):
22-25 points – 5;
18-21 points – 4;
15-17 points – 3.
Section – " - in the ticket 3 questions, 1 question-the maximum number of 3 points:
9 points-5;
7.5points-4;
6 points-3.
SCALE OF EVALUATION INTERVIEWSSection"": in the ticket 5 questions, 1 question-the maximum number of 6 points:
28-30 points-5;
24-27points – 4;
20-23 score – 3.
Section"": in the ticket 5 questions, 1 question-the maximum number of 5the score 22-25 points – 5; 18-21 points– 4; 15-17 points– 3.SCALE OF EVALUATION REPORTS
Annex 1SCALE OF ASSESSMENT OF RESULTS OF INTERMEDIATE CERTIFICATION. During a semester work on practical occupations (the current control), delivery of control points (boundary control) graded by the teacher conducting the class, and scores are recorded in the sheet, available for viewing.

The maximum number of points -100. For each control point, the student must collect the number of points not less than the minimum.The final grade is determined based on the summation of a semester and test scores. The exam is held inoral, written, textual form. To obtain a positive assessment in the exam, the student must dial notless than half of the set amount of exam points, i.e. 10 points. Example of calculation: semester points: semester I – 70, in the second semester – 80 on the exam – not less than 15. Means (70+80):2+15=90 points, i.e. "excellent".A scale score for determining the final:
≥ 85balls - " excellent»
< 85 points - " good»
< 70 points - " satisfactory»
< 60 points - " unsatisfactory»

6. DUCATIONAL-METHODOLOGICAL AND INFORMATION SUPPORT OF THE DISCIPLINE (MODULE)

6.1. Recommended reading

6.1.1. Main literature

	Авторы, составители	Заглавие	Издательство, год
Л1.1	Под ред. В.В. Зверева, М.Н. Бойченко	Медицинская микробиология, вирусология и иммунология: В 2-х т.: Учебник	М.: ГЭОТАР-Медиа 2010
Л1.2	Борисов Л.Б.	Медицинская микробиология, вирусология, иммунология: Учебник	М.: Медицинское информационное агентство 2005
Л1.3	Сидоренко О.Д., Борисенко Е.Г., Ванькова А.А., Войно Л.И.	Микробиология: Учебник для агротехнологов	М.: ИНФРА-М 2005

6.1.2. Дополнительная литература

	Авторы, составители	Заглавие	Издательство, год
Л2.1	Ю.К. Скрипкин	Кожные и венерические болезни: Учебник для врачей и студ. мед. вузов	Москва: Триада-фарм 2001
Л2.2	Ройт А., Бростофф Дж., Мейл Д.	Иммунология: Учеб. пособие	М.: Мир 2000
Л2.3	Родионов А.Н.	Сифилис: Учебное пособие	
Л2.4	Лобзин Ю.В.	Руководство по инфекционным болезням с атласом инфекционной патологии: Учебное пособие	
Л2.5	Perelson A.S., Weisbuch G.	Immunology for physicists: Учебное пособие	
Л2.6	Николаева Л.И., Сапронов Г.В., Лейбман Е.А.	Особенности современной диагностики гепатита С	
Л2.7	Жукембаева А.М.	Инфекции, передающиеся половым путем при беременности:	
Л2.8	Борисов Л.Б.	Медицинская микробиология, вирусология, иммунология: учебное пособие	М.: Медицинское информационное агентство
Л2.9	Пяткин К.Д., Кривошеин Ю.С.	Микробиология (с вирусологией и иммунологией): Учебник для медвузов	М.: Медицина 1981
Л2.10	Под ред. А.А. Воробьева	Медицинская микробиология, вирусология и иммунология: Учебник	М.: Мед. информ. агентство 2004
Л2.11	Воробьев А.А., Быков А.С., Пашков Е.П., Рыбакова А.М.	Микробиология: Учебник	
Л2.12	Алешукина А.В.	Медицинская микробиология: Учебное пособие	Ростов н/Д: Феникс 2003
Л2.13	Гусев М.В., Минеева Л.А.	Микробиология: Учебник для студентов биологических специальностей вузов	М.: Издательский центр "Академия" 2003

6.1.3. Методические разработки

	Авторы, составители	Заглавие	Издательство, год
Л3.1	Адамбеков Д.А., Бестужева Г.Р., Мустафина Ф.С.	Ситуационные задачи по микробиологии, вирусологии, иммунологии: методические рекомендации к практическим занятиям по микробиологии, вирусологии, иммунологии	Бишкек: Изд-во КРСУ 2013
Л3.2	Адамбеков Д.А., Альджамбаева И.Ш., Тулаинова И.К., Мустафина Ф.С., Бестужева Г.Р., Кудайбергенова Т.А.	Полимеразная цепная реакция (ПЦР) в диагностике инфекционных заболеваний: Учебное пособие для студентов и врачей	Бишкек: Изд-во КРСУ 2001
Л3.3	Под ред. Адамбекова Д.А., Бестужева Г.Р., Усманов Р.К., Сабодаха М.А.	Вирусные гепатиты: Учебно-методическое пособие для студентов и врачей	Бишкек: Изд-во КРСУ 2005
Л3.4	Адамбеков Д.А., Мустафина Ф.С., Бестужева Г.Р., Адамбеков Д.А.? Садыбакасова Г.К.	Медицинская микробиология и вирусология: учебно- методическое пособие к лабораторным занятиям для студентов специальностей "Лечебное дело" и "Педиатрическое дело"	Бишкек: Изд-во КРСУ 2016

6.2. Перечень ресурсов информационно-телекоммуникационной сети "Интернет"		
Э1	Э1	
Э2	Э2	
Э3	Э3	
Э4	Э4	
Э5	Э5	
Э6	Э6	
6.3. Перечень информационных и образовательных технологий		
6.3.1 Компетентностно-ориентированные образовательные технологии		
6.3.1.1	Traditional educational technologies: lectures, practical exercises, laboratory works	
6.3.1.2	reconstructive type, focused on the communication of knowledge and methods of action transmitted to students	
6.3.1.3	ready and intended for assimilation.Lecturing involves the use of multimedia	
6.3.1.4	equipments. Practical training with the use of tables, stands, visual AIDS.	
6.3.1.5	Innovative educational technologies: role-playing games, specific analysis	
6.3.1.6	situations, preparation of reports by students with presentations on given topics.	
6.3.1.7	Information and educational technology: use by students of computer	
6.3.1.8	technology and Internet resources. View educational videos.	
6.3.2 Перечень информационных справочных систем и программного обеспечения		

7. МАТЕРИАЛЬНО-ТЕХНИЧЕСКОЕ ОБЕСПЕЧЕНИЕ ДИСЦИПЛИНЫ (МОДУЛЯ)	
7.1	Logistics discipline microbiology, virology
7.2	To teach microbiology, virology has 5 classrooms and 2 rooms for teachers.
7.3	training room equipment:
7.4	1. Furniture and stationary equipment
7.5	- Board class;
7.6	- Table and chair for the teacher;
7.7	- Tables and chairs for students;
7.8	- General desktop to work with reagents;
7.9	- bookcase;
7.10	- Cabinet for reagents;
7.11	- Cabinets for tools and equipment.
7.12	2. Teaching visual aids
7.13	- Posters, slides, photographs;
7.14	- Dummies colonies of bacteria, fungi on Petri dishes;
7.15	- The slides of bacteria, fungi, protozoa;
7.16	- Sample referral form for microbiological studies, recording the results of the survey, etc.;
7.17	- Photos depicting lesions integument infectious agent;
7.18	- Posters and other graphic materials, used in prevention.
7.19	3. Equipment and devices
7.20	- Autoclave;
7.21	- Distillation (D-1) (4.5 liters per hour) Electric;
7.22	- Microscopes with immersion system;
7.23	- Household refrigerator;
7.24	- Dry Heat cupboard;
7.25	- Thermostat for the cultivation of microorganisms.

8. МЕТОДИЧЕСКИЕ УКАЗАНИЯ ДЛЯ ОБУЧАЮЩИХСЯ ПО ОСВОЕНИЮ ДИСЦИПЛИНЫ (МОДУЛЯ)

Logistics discipline microbiology, virology
To teach microbiology, virology has 5 classrooms and 2 rooms for teachers.
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