

ОҢТҰСТІК-ҚАЗАҚСТАН MEDISINA АКАДЕМИЯСЫ «Оңтүстік Қазақстан медицина академиясы» АҚ	 SKMA -1979-	SOUTH KAZAKHSTAN MEDICAL ACADEMY АО «Южно-Казахстанская медицинская академия»
Department «Microbiology, Virology and Immunology»		044-50/11- 12
Work program of the discipline (Syllabus)		1p. out of 24

Department of «Microbiology, virology and immunology»

Working curriculum of the discipline (Syllabus) «Microbiology and Immunology»

Educational program 6B10115 «Medicine»

1.	General information about the discipline		
1.1	Discipline code: MI 2219	1.6	Academic year: 2023-2024
1.2	Name of discipline: Microbiology and immunology	1.7	Course: 2
1.3	Prerequisites: Molecular biology and medical genetics, chemistry, basic morphology and physiology	1.8	Semester: 4
1.4	Post-requests: Infectious diseases and infection control	1.9	Number of credits (ECTS): 5
1.5	Cycle: BD	1.10	Component: UC
2.	Description of the discipline (maximum 50 words)		
The discipline in microbiology and immunology reflects the modern achievements of these sciences, which are mandatory and important in the system of biomedical sciences, providing fundamental theoretical knowledge, on the basis of which all the training of a future doctor of any specialty is built.			
3.	Summative assessment form		
3.1	Testing ✓	3.5	coursework
3.2	Writing	3.6	Essay
3.3	Oral	3.7	Project
3.4	OSPE/OSKE or practical skills intake ✓	3.8	Other (specify)
4.	Aims of the discipline		
Private microbiology studies pathogenic microorganisms for humans: bacteria, viruses, fungi, protozoa, their morphology and physiology; the role of microorganisms in the etiology and pathogenesis of infectious diseases; the main clinical manifestations and the prevalence of the diseases caused; specific diagnosis, prevention and treatment of infectious diseases. The student, analyzing the results of diagnostic methods for antibiogram, argues his own recommendations for the use of antibiotics and immunobiological preparations.			
5.	Learning outcomes (RO disciplines)		
LO1.	Knows the factors and types of immunity, its significance for a person, the principles of immunoprophylaxis and immunotherapy of human diseases, the mechanisms of the formation of allergic reactions, the types of immunological reactions and their application in medical practice;		
LO2.	Knows taxonomy, morphological and biological properties of pathogens of infectious diseases, epidemiology, mechanisms and ways of transmission of pathogens, pathogenesis, main clinical manifestations of the disease, immunity, principles of laboratory diagnostics, specific treatment and prevention;		
LO3.	Interprets the results of bacteriological, virological and immunological research methods;		
LO4.	Analyzing the results of bacteriological, virological and immunological diagnostic methods and antibiogram, he argues his own recommendations on the use of antibiotics and immunobiological preparations;		
LO5.	Possesses the skills of taking biomaterial and sending the test material for microbiological research.		
LO6.	Able to transfer own knowledge and skills in working with educational, reference, scientific information on microbiology and immunology;		
LO7.	Synthesizes and transforms the acquired knowledge for the purpose of further independent learning.		

5.1	LO disciplines	The learning outcomes of the EP with which the LO disciplines are associated				
	LO 1 LO 2	LO 1. Demonstrates and applies fundamental knowledge in the field of biomedical, clinical, epidemiological and social-behavioral sciences.				
	LO 6 LO 7	LO 7. Complies with the standards of public health protection, sanitary and hygienic regime and labor safety standards in healthcare organizations, epidemiological safety of the environment.				
	LO 3 LO 4 LO 5	LO 10. Apply scientific principles, methods and knowledge to medical practice and research. Able to continuous self-education and development.				
6.	Detailed information about the discipline					
6.1	Venue (building, auditorium): South Kazakhstan Medical Academy, Department of Microbiology, Virology and Immunology. Al-Farabi-1 Square; building No. 2, I-floor, room No. 110, 112, 123a,b, 117, 119b, 511, 513, 514 Telephone. w\n 402					
6.2	Number of hours	Lectures	Practical lessons	Laboratory classes	SIW	ISWP
		10	40	-	70	30
7.	Information about teachers					
№	FULL NAME	Degrees and position	E-mail	Research interests	Scientific interests, etc.	Achievements
1.	Seytkhanova Bibigul Tolegenovna	Head of the department, doctor of medical sciences, professor	d.m.n._bibigul@mail.ru		Microbiocenosis	Author of 95 scientific publications, 1 email. textbook, 1 monograph, 1 textbook, 7 manuals
2.	Ratbek Saylaubekuly	Candidate of medical sciences	sailaubekuly_r@mail.ru		Fundamentals of clinical parasitology	Author of 45 international and republican scientific publications
3.	Serikpaeva Tamarakhan Tyulkubaevna	Senior Lecturer	Tomarajan62@mail.ru		Sanitary microbiology	Author of 37 scientific publications, 1 textbook
4.	Nuralieva Gulmira Nurpapaevna	Senior Lecturer	Nuralieva70bk.ru		Sanitary microbiology	Author of 15 scientific publications, 1 textbook
5.	Abdramanova Aigerym Asylkhanovna	Senior teacher	aigera_0@mail.ru		The state of dysbacteriosis rheumatoid arthritis	Author of 15 scientific publications, 2 textbooks
6.	Sadybek Uldana Abilkyzy	Senior teacher	sadybek.uldana@mail.ru		The relevance of Microbiology in	Author of 9 scientific

				the modern world	publications, 1 manuals
7.	Polatbekova Shapagat Tolegenkyzy	Senior teacher	p.shapagat@mail.ru	Fundamentals of clinical parasitology	Author of 5 scientific publications, 4 textbooks
8.	Odzyal Dayana Eduardovna	Senior teacher	<u>dayana_odzyal@mail.ru</u>	The relevance of microbiology in the modern world	Author of 5 scientific publications, 1 educational benefits

8 Thematic plan						
A week	Topic title	Summary	RO module	Number of hours	Forms/ methods/ learning technologies	Forms/ assessment methods
1.	Lecture. The doctrine of immunity. Basic principles of organization and functioning of the immune system.	Types of immunity. Organs of the immune system. Immunocompetent cells and their main functions. Fundamentals of immunoprophylaxis. Vaccines and vaccine prevention of infectious diseases. Therapeutic and prophylactic sera and immunoglobulins. Principles for obtaining them.	LO1	1	Review	Feedback questions
	Practical lesson. Immunity. Nonspecific resistance factors.	Humoral and cellular factors of nonspecific immunity. Natural resistance of the macroorganism. Methods for determining nonspecific protection factors and methods for assessing the immunological status of a microorganism. Phagocytosis.	LO1 LO2	3	Oral answer to the questions of the topic, solution of situational tasks, fulfillment of tasks in the workbook.	Checklist assessment
	LIWT/LIW. The concept of intercellular cooperation in immunogenesis.	Immunocompetent cells of the human body. The concept of "immunity", the main functions of immunity. Types of immunity. The human immune system as a diffuse organ. Cells of the immune system.	LO6	2 (4)	Discussion of the presentation, preparation of situational tasks on the topic, writing essays.	Presentation, essay on the topic, compilation of situational tasks on the topic.

2.	Lecture. Antigens. Antigen presenting cells. Antibodies. Cellular immune system.	General characteristics of antigens and antigen-presenting cells, their role in the induction and regulation of the immune response. Autoantigens. protective antigens. Basic functions of the T-system. Differentiation of T-lymphocytes. Dynamics of antibody formation. Primary and secondary immune response. Immunological memory and tolerance.	LO1	1	Visualization lecture	Feedback questions
	Practical lesson. Specific immune factors. Antigens and antibodies.	Methods for assessing the T and B-system of human immunity. Factors of immunity and assessment of the immunological status of the human body. Antigen-binding cells, their role in the induction and regulation of the immune response. Avidity.	LO1 LO2	3	Oral answer to the questions of the topic, solution of situational tasks, fulfillment of tasks in the workbook.	Checklist assessment
	LIWT/LIW. General characteristics of antigens. The role of immunoglobulin classes in immunity.	Antigens of bacteria and viruses, superantigens. Antigens of the human body. Interaction of antigens with immunocompetent cells of the body. Classes of immunoglobulins in the immunity of newborns in connection with their accumulation in the organisms of the mother and fetus. Antibodies. Chemical nature and structure of antibodies or immunoglobulins. Classes of immunoglobulins, their main characteristics, differences and features. Antiglobulin antibodies. Anti-idiotypic antibodies. The role of immunoglobulins in the immunity of newborns.	LO6	2 (4)	Discussion of the presentation, preparation of situational tasks on the topic, writing essays.	Presentation, essay on the topic, compilation of situational tasks on the topic.

3.	Lecture. Serological reactions.	Reactions between antigens and antibodies in vitro or serological tests, widely used in microbiological and serological (immunological) laboratories for the diagnosis of infectious diseases.	LO1	1	Thematic	Feedback questions
	Practical lesson. Serological reactions.	General characteristics of serological reactions. Reaction mechanism, diagnostic value. Reactions proceeding with antigen enlargement (agglutination reaction, precipitation, immunodiffusion, immunoelectrophoresis, immunoblotting, Coombs reaction). Reactions occurring with the neutralization of the antigen (neutralization reaction, flocculation, hemagglutination inhibition reaction). Reactions involving complement (reaction of complement fixation, immune lysis, hemolysis, immobilization). Reactions involving labeled antigens and antibodies (immunofluorescence reaction, ELISA).	LO1 LO2	3	Oral answer to the questions of the topic, solution of situational tasks, filling out a workbook.	Checklist assessment
	LIWT/LIW. Applied immunology. Molecular biological methods: NA hybridization, PCR, DNA sequencing	Nucleic acid hybridization method. Polymerase chain reaction. DNA sequencing method.	LO6	2 (4)	Discussion of the presentation, preparation of situational tasks on the topic, writing essays.	Presentation, essay on the topic, compilation of situational tasks on the topic.
4.	Lecture. Causative agents of purulent-inflammatory and purulent-septic infections.	Biological properties of pathogens and microbiological methods for diagnosing staphylococcal, streptococcal, meningococcal, gonococcal infections, treatment and prevention.	LO2	1	Lecture - provocation (lecture with planned mistakes)	Feedback questions

	Practical lesson. Causative agents of purulent-inflammatory and purulent-septic infections.	Morphology, cultural properties, pathogenesis, microbiological diagnostics of staphylococci, pneumococci, streptococci. Principles of laboratory diagnostics. specific prophylaxis.	LO2 LO3 LO4 LO5	3	Oral answer to the questions of the topic, performing laboratory work, filling out a workbook.	Checklist assessment
	LIWT/LIW. Causative agents of sexually transmitted diseases.	Modern methods of diagnosis and treatment of sexually transmitted infections (syphilis, gonorrhea, urogenital chlamydia).	LO6 LO7	2 (4)	Discussion of the presentation, preparation of situational tasks on the topic, writing essays, analysis of scientific articles from scientific journals Scopus, Web of science (RBL), etc.	Presentation, essay on the topic, compilation of situational tasks on the topic, analysis of scientific articles.
5.	Lecture. Pathogenic clostridia. Causative agents of wound infections.	Pathogenic anaerobes. Biological properties of causative agents of tetanus, gas gangrene and botulism. Methods of microbiological diagnostics and prevention.	LO2	1	Review	Feedback questions
	Practical lesson. Causative agents of anaerobic infections.	Morphology, cultural properties, pathogenesis, microbiological diagnostics of clostridia (gas gangrene, tetanus, botulism). Specific prophylaxis. Sowing on Kitt-Taroczy medium.	LO2 LO3 LO4 LO5	3	Oral answer to the questions of the topic, solution of situational tasks, filling out a workbook.	Checklist assessment
	LIWT/LIW. Biological features of Pseudomonas aeruginosa and Haemophilus influenzae.	Microbiological diagnosis of diseases caused by Pseudomonas aeruginosa. Pathogenicity for humans and localization in the patient's body. The role of Pseudomonas aeruginosa in nosocomial infections.	LO6 LO7	2 (4)	Discussion of the presentation, preparation of situational tasks on the topic, writing essays,	Presentation, essay on the topic, compilation of situational tasks on the topic,

		Antibiotic resistance. Haemophilus influenzae. Localization in the patient's body. Role in human pathology.			analysis of scientific articles from scientific journals Scopus, Web of science (RBL), etc.	analysis of scientific articles.
6	Lecture. Causative agents of intestinal infections.	Escherichia coli. Morphology, cultural properties. Knowledge in human pathology. Salmonella is the causative agent of typhoid fever and paratyphoid fever. Morphology, cultural properties, pathogenesis, microbiological diagnostics. Causative agents of salmonellosis. Causative agents of dysentery. The main directions of bacteriological research in acute intestinal diseases.	LO2	1	Lecture - provocation (lecture with planned mistakes)	Feedback questions
	Practical lesson. Causative agents of intestinal infections.	Morphology, cultural properties, pathogenesis, microbiological diagnostics of Escherichia, Shigella, Salmonella. Specific prevention and treatment.	LO2 LO3 LO4 LO5	3	Oral answer to the questions of the topic, performing laboratory work, filling out a workbook.	Checklist assessment
	LIWT/LIW. Causative agents of acute diarrheal infections. Cholera.	Clinical, epidemiological and pathogenetic features of cholera and other acute intestinal infections in the context of modern outbreaks.	LO6 LO7	2 (4)	Discussion of the presentation, preparation of situational tasks on the topic, writing essays, analysis of scientific articles from scientific journals Scopus, Web of science (RBL), etc.	Presentation, essay on the topic, compilation of situational tasks on the topic, analysis of scientific articles.

7.	Lecture. Causative agents of especially dangerous infections.	Causative agents of cholera, plague, anthrax, CCHF. Morphology, cultural properties, pathogenesis, microbiological diagnostics of pathogens.	LO2	1	Consulting lecture	Feedback questions
	Practical lesson. Causative agents of airborne infections.	Morphology, cultural properties, pathogenesis, microbiological diagnostics of causative agents of tuberculosis, meningococcal infection, diphtheria, whooping cough. Method of "cough plates". Allergic tests. specific prophylaxis.	LO2 LO3 LO4 LO5	3	Oral answer to the questions of the topic, performing laboratory work, filling out a workbook.	Checklist assessment
	LIWT/LIW. Mid-term №1	Topics of lectures, practical exercises, self-study covered during the cycle	LO1-7	2 (4)	Assessment of midterm control (oral answer on ticket questions)	Oral response
8.	Lecture. Mycoses and pathogenic protozoa.	Morphology, cultural properties, pathogenesis and classification of fungi and protozoa Microbiological diagnostics. Pathogenicity factors. Sources of invasion, route of infection, life cycle of the parasite.	LO2	1	Review	Feedback questions
	Practical lesson. Zoonotic pathogens.	Morphology, cultural properties, pathogenesis, microbiological diagnostics of plague, brucellosis, anthrax. Specific prophylaxis.	LO2 LO3 LO4 LO5	3	Oral answer to the questions of the topic, solution of situational tasks, filling out a workbook.	Checklist assessment
	LIWT/LIW. West Nile fever, Zoonotic cutaneous leishmaniasis.	Quarantine and zoonotic infections in Kazakhstan.	LO6 LO7	2 (4)	Discussion of the presentation, preparation of situational tasks on the topic, writing essays, analysis of scientific	Presentation, essay on the topic, compilation of situational tasks on the topic, analysis of scientific

					articles from scientific journals Scopus, Web of science (RBL), etc.	articles.
9.	Lecture. Causative agents of respiratory viral infections.	Influenza virus. Parainfluenza viruses. Coronavirus infection. Morphology, cultural properties, pathogenesis and classification. Microbiological diagnostics.	LO2	1	Conference lecture	Feedback questions
	Practical lesson. Causative agents of transmissible infections.	Biological features and laboratory diagnosis of relapsing fever, epidemic typhus, Q fever, CCHF. Microbiological diagnosis of transmissible infections. Specific prevention and treatment.	LO2 LO3 LO4 LO5	3	Oral answer to the questions of the topic, solution of situational tasks, filling out a workbook.	Checklist assessment
	LIWT/LIW. Mycoses and pathogenic protozoa.	Molds and their role in human pathology. Pathogenic protozoa. Role in human pathology. Microbiological diagnosis of mycoses and protozoal infections. Biological features and laboratory diagnostics of keratomycosis, trichomycosis, candidiasis, sporotrichosis, histoplasmosis.	LO6 LO7	2 (4)	Discussion of the presentation, preparation of situational tasks on the topic, writing essays, analysis of scientific articles from scientific journals Scopus, Web of science (RBL), etc.	Presentation, essay on the topic, compilation of situational tasks on the topic, analysis of scientific articles.
10.	Lecture. Human immunodeficiency virus and oncogenic viruses.	General characteristics and microbiological diagnosis of human immunodeficiency virus and oncogenic viruses.	LO2	1	Problematic	Feedback questions
	Practical lesson. Causative agents of acute respiratory viral infections.	Morphology, cultural properties, pathogenesis, microbiological diagnostics of influenza, parainfluenza, as well as adenovirus and coronavirus infections.	LO2 LO3 LO4 LO5	3	Oral answer to the questions of the topic, performing laboratory	Checklist assessment

		Specific prophylaxis. Biomaterial sampling technique for the diagnosis of adenovirus and coronavirus infection.			work, filling out a workbook.	
	LIWT/LIW. Herpesviruses (alpha, beta, gamma herpesviruses)	Human herpesvirus infections in the 21st century: principles of diagnosis and therapy.	LO6 LO7	2 (4)	Discussion of the presentation, preparation of situational tasks on the topic, writing essays, analysis of scientific articles from scientific journals Scopus, Web of science (RBL), etc.	Presentation, essay on the topic, compilation of situational tasks on the topic, analysis of scientific articles.
11.	Practical lesson. The causative agents of measles, rubella, chickenpox and mumps.	Morphology, cultural properties, pathogenesis, microbiological diagnostics of measles, rubella, chickenpox and mumps. Specific prophylaxis.	LO2 LO3 LO4 LO5	3	Oral answer to the questions of the topic, solution of situational tasks, filling out a workbook.	Checklist assessment
	LIWT/LIW. Causative agents of neuroviral infections.	Problems of rabies prevention. The current state of the problems of tick-borne encephalitis.	LO6 LO7	3 (4)	Discussion of the presentation, preparation of situational tasks on the topic, writing essays, analysis of scientific articles from scientific journals Scopus, Web of science (RBL), etc.	Presentation, essay on the topic, compilation of situational tasks on the topic, analysis of scientific articles.

12.	Practical lesson. Viral hepatitis.	Morphology, cultural properties, pathogenesis, microbiological diagnosis of viral hepatitis. Virological and serological methods for diagnosing viral hepatitis. Specific prophylaxis.	LO2 LO3 LO4 LO5	3	Oral answer to the questions of the topic, solution of situational tasks, filling out a workbook.	Checklist assessment
	LIWT/LIW. HIV (AIDS). Oncogenic viruses.	General characteristics of the human immunodeficiency virus and oncogenic viruses.	LO6 LO7	3 (4)	Discussion of the presentation, preparation of situational tasks on the topic, writing essays, analysis of scientific articles from scientific journals Scopus, Web of science (RBL), etc.	Presentation, essay on the topic, compilation of situational tasks on the topic, analysis of scientific articles.
13.	Practical lesson. Pathogens enterovirus and rotavirus infections.	General characteristics of enterovirus and rotavirus infection. Biological features and laboratory diagnosis of poliomyelitis. Enteroviral infections caused by COXACKIE and ECHO viruses. Virological and serological diagnostic methods. Prevention.	LO2 LO3 LO4 LO5	4	Oral answer to the questions of the topic, solution of situational tasks, filling out a workbook.	Checklist assessment
	LIWT/LIW. Modern diagnostic methods in microbiology.	The latest achievements and research in the world of microbiology.	LO6 LO7	2 (4)	Discussion of the presentation, preparation of situational tasks on the topic, writing essays, analysis of scientific articles from scientific journals	Presentation, essay on the topic, compilation of situational tasks on the topic, analysis of scientific articles.

					Scopus, Web of science (RBL), etc.	
14.	LIWT/LIW. Mid-term №2	Topics of lectures, practical exercises, self-study covered during the cycle	LO1-7	2 (3)	Assessment of midterm control (oral answer on ticket questions)	Oral response
Preparation and conduct of intermediate certification				15		
9.	Teaching methods					
9.1	Lectures	Review, visualization lecture, lecture - provocation (lecture with planned mistakes), thematic, conference lecture, consulting lecture, problematic.				
9.2	Practical lessons	Oral answer to the questions of the topic, solution of situational tasks, performing laboratory work, fulfillment of tasks in the workbook.				
9.3	SIW/ISWP	Discussion of the presentation, preparation of situational tasks on the topic, writing essays, analysis of scientific articles from scientific journals Scopus, Web of science (RBL), etc.				
9.4	Mid-term	Assessment of midterm control (oral answer on ticket questions)				
10.	Evaluation criteria					
10.1.	Criteria for evaluating the learning outcomes of a subject					
	Learning outcomes of the subject "Microbiology and Immunology"	Unsatisfactory	Satisfactory	Good	Excellent	
	LO1 Knows the factors and types of immunity, its significance for humans, the principles of immunoprophylaxis and immunotherapy of human diseases, the mechanisms of the formation of allergic reactions, types of immunological reactions and their application in medical practice;	1) cannot describe immunotherapy and immunoprophylaxis; 2) does not know immunological reactions.	1) can describe immunotherapy and immunoprophylaxis; 2) knows immunological reactions.	1) uses knowledge about immunotherapy and immunoprophylaxis; 2) explains immunological reactions.	1) reveals the importance of immunotherapy and immunoprophylaxis; 2) uses immunological reactions in practice.	
	LO2 Knows the taxonomy, morphological and biological properties of pathogens of infectious diseases, epidemiology, mechanisms and ways of transmission of	1) does not know the causative agents of infectious diseases; 2) does not understand the	1) knows the causative agents of infectious diseases; 2) understands the morphological	1) describe the taxonomic categories of pathogens of infectious diseases; 2) knows how to conduct	1) classifies pathogens of infectious diseases according to taxonomic categories; 2) independently conducts a	

<p>pathogens, pathogenesis, main clinical manifestations of the disease, immunity, principles of laboratory diagnostics, specific treatment and prevention;</p>	<p>morphological and tinctorial properties of pathogens; 3) does not mention cultural properties; 4) does not have information about the epidemiology, pathogenesis, clinical manifestations, immunity of infectious diseases; 5) does not describe methods of laboratory diagnostics; 6) does not know specific medical preparations; 7) does not understand the effectiveness of specific prophylaxis</p>	<p>and tinctorial properties of pathogens; 3) mentions cultural properties; 4) has information about the epidemiology, pathogenesis, clinical manifestations, immunity of infectious diseases; 5) describe methods of laboratory diagnostics; 6) knows specific medical preparations; 7) understands the effectiveness of specific prevention</p>	<p>morphological research and describe the morphological and tinctorial properties of pathogens; 3) inoculates the studied material on nutrient media, has knowledge of cultural properties; 4) has knowledge in the field of epidemiology, pathogenesis, clinical manifestations, immunity of infectious diseases; 5) owns effective methods of laboratory diagnostics; 6) can separate specific therapeutic drugs depending on their sensitivity; 7) substantiate the effectiveness of specific prophylaxis.</p>	<p>morphological study and interprets the morphological and tinctorial properties of pathogens; 3) demonstrate the technique of inoculation of the test material on appropriate nutrient media and explain the cultural properties; 4) can substantiate the epidemiology, pathogenesis, clinical manifestations of infectious diseases, the mechanism of immunity; 5) can choose an effective method of laboratory diagnostics and implement it; 6) selects specific medicinal preparations taking into account sensitivity; 7) can explain the effectiveness of specific prophylaxis and recommend it.</p>
<p>LO3 Interprets the results of bacteriological, virological and immunological research methods;</p>	<p>1) does not understand the isolation of a pure culture of the pathogen by bacteriological examination; 2) does not describe the infection of the chick embryo</p>	<p>1) understands the isolation of a pure culture of the pathogen by the method of bacteriological research; 2) describe the infection of the chick embryo</p>	<p>1) is able to isolate a pure culture of the pathogen by bacteriological examination; 2) can infect a chicken embryo by virological testing; 3) has knowledge</p>	<p>1) isolates a pure culture of the pathogen by bacteriological research method and interprets the result; 2) can infect cell cultures, chicken embryos by virological</p>

		by virological testing; 3) does not know about enzyme immunoassay, precipitation reactions.	by virological testing; 3) knows about enzyme immunoassay, precipitation reactions.	of enzyme immunoassay, precipitation reactions.	examination and evaluate the result under a microscope; 3) can read the result of enzyme immunoassay, precipitation reaction.
	LO4 Analyzing the results of bacteriological, virological and immunological diagnostic methods and antibiogram, argues own recommendations on the use of antibiotics and immunobiological preparations;	1) does not know bacteriological, virological and immunological methods; 2) does not understand antibiotics and immunobiological preparations.	1) knows bacteriological, virological and immunological methods; 2) understands antibiotics and immunobiological preparations.	1) interprets the results of bacteriological, virological and immunological methods; 2) has knowledge of antibiotics and immunobiological preparations.	1) analyze the results of bacteriological, virological and immunological methods; 2) offers its own options for the use of antibiotics and immunobiological preparations..
	LO5 Possesses the skills of taking biomaterial and sending the test material for microbiological examination.	1) does not understand the studied material; 2) does not know laboratory research methods.	1) understands the studied material; 2) knows laboratory research methods.	1) has information about the research material required by the type of disease; 2) describes the methods of laboratory research.	1) can choose material for research depending on the type of disease; 2) most effectively directs the study of research material.
	LO6 Able to transfer own knowledge and skills in working with educational, reference, scientific information on microbiology and immunology;	1) does not know about the methods used in laboratory research of infectious diseases	1) knows about the methods used in laboratory research of infectious diseases	1) get acquainted with scientific papers on new methods used in laboratory research of infectious diseases	1) reads scientific papers and shares news about new methods used in laboratory research of infectious diseases
	LO7 Synthesizes and transforms the acquired knowledge for the purpose of further independent learning.	1) Has no desire for continuous self-education and development	1) Does not complete tasks	1) Completely completes tasks correctly	1) Demonstrates motivation for independent work, creative approach to completing tasks

10.2 Criteria for evaluating teaching methods and technology

Checklist for practice

Current control:

EVALUATION CRITERIA FOR THE PRACTICAL LESSON CHECKLIST

№	Criteria for evaluation	Level			
		Excellent	Acceptable	Requires correction	Unacceptable
1	Oral response to questions on the topic	17-20	15-17	10-15	0-10
2	Solving situational problems / Performing laboratory work	26-30	20-26	15-20	0-15
3	Completing assignments on the workbook	47-50	35-46	25-34	0-24
Final grade:		90-100	70-89	50-69	0-49

1. Oral answer to the questions of the topic

№	Criteria for evaluation	Points
1	It is put in the event that the learner did not make any mistakes or inaccuracies during the answer. He orients himself in theories, concepts and directions in the discipline under study and gives them a critical assessment, uses the scientific achievements of other disciplines.	47-50
2	It is put in the event that the learner during the answer did not make gross errors in the answer, made unprincipled inaccuracies or fundamental errors corrected by the student himself, managed to systematize the program material with the help of the teacher.	35-46
3	It is put in the event that the learner made inaccuracies and unprincipled mistakes during the answer, limited himself only to the educational literature indicated by the teacher, experienced great difficulties in systematizing the material.	25-34
4	It is put in the event that the learner made fundamental mistakes during the answer, did not work through the main literature on the topic of the lesson; does not know how to use the scientific terminology of the discipline, answers with gross stylistic and logical errors.	0-24

2. a) Solution of situational problems

№	Criteria for evaluation	Points
1	The learner showed original thinking, showed a deep knowledge of the material, used the scientific achievements of other disciplines when answering. Used scientific terminology.	26-30
2	Actively participated in the work, showed knowledge of the material, made minor inaccuracies or fundamental errors corrected by the learner himself	20-26
3	When working in a group, he was passive, made inaccuracies and unprincipled mistakes, and experienced great difficulties in systematizing the material.	15-20
4	He did not take part in the work of the group, answering the questions of the teacher, made fundamental mistakes and inaccuracies, did not use scientific terminology when answering.	0-15

b) Performing laboratory work

№	Criteria for evaluation	Points
1	Completed practical and laboratory work in a timely manner and without any errors and submitted reports on them, took an active part in the discussion of the results of the work, made reasonable conclusions, and showed original thinking	26-30
2	Timely completed practical and laboratory work and submitted reports on them without fundamental remarks, took an active part in the discussion of the results of the work	20-26
3	Timely completed practical and laboratory work and submitted reports on them. During work, he was not active, he needed the help of a teacher	15-20
4	Untimely submitted reports on practical work, made fundamental mistakes in their implementation. Completed not all the practical work provided by the program. Did not participate in the discussion of the results of the work.	0-15

3. Completing assignments on the workbook

№	Criteria for evaluation	Points
1	The learner completed the work without mistakes or shortcomings. Allowed no more than one flaw	47-50
2	The learner completed the work in full, but made in it: no more than one serious mistake and one defect. Allowed no more than two shortcomings.	35-46
3	The learner correctly completed at least half of the work and made: no more than two gross mistakes or no more than one gross and one non-gross error and one defect. No more than two or three blunders, or one blunder and three shortcomings. In the absence of errors, but in the presence of four or five shortcomings.	25-34
4	The learner made the number of errors (shortcomings) exceeding the norm. Didn't start work. Correctly completed no more than 10% of all tasks	0-24

As a rule, several forms of knowledge control are used in the lesson. The journal is given an average rating.

Checklist for LIWT

GRADING CRITERIA FOR LEARNERS' INDEPENDENT WORK UNDER THE GUIDANCE OF A TEACHER

Topic presentation

Form control	Grade	Criteria for evaluation
Topic presentation	Excellent A + (4,0; 95-100%) A-(3,76; 90-94%)	The presentation was made independently, on time, with a volume of at least 25 slides. At least 7 literary sources were used. The slides are informative and concise. During the defense, the author demonstrates deep knowledge on the topic. Does not make mistakes when answering questions during the discussion.
	Good B+ (3,33;85-89%) B- (2,67; 75-79%) C+ (2,33;70-74%)	The presentation was made independently, on time, with a volume of at least 23 slides. At least 6 literary sources were used. The slides are informative and concise. During the defense, the author demonstrates good knowledge on the topic. Makes minor mistakes

		when answering questions that he corrects.
	Satisfactorily C (2,0;65-69%) C- (1,67;60-64%) Д+ (1,33;55-59%) Д(1,0; 50-54%)	The presentation was made independently, on time, with a volume of at least 20 slides. At least 5 literary sources were used. The slides are not meaningful. When defending, the author makes fundamental mistakes when answering questions.
	Unsatisfactory FX (0,5; 25-49%) F (0; 0-24%)	The presentation was not delivered on time, the volume is less than 5-10 slides. Less than 5 literary sources were used. The slides are not meaningful. When defending, the author makes gross mistakes when answering questions. Does not focus on own material.

Preparation of written creative work (essay)

Form control	Grade	Criteria for evaluation
Preparation of written creative work (essay)	Excellent A + (4,0; 95-100%) A- (3,76; 90-94%)	The content of the work is fully consistent with the topic; the topic is covered in depth and reasoned. Slender in composition, logical and consistent presentation of thoughts. The problem of the essay is clearly formulated. There are no actual errors. The conclusion contains conclusions that logically follow from the content of the main part.
	Good B+ (3,33;85-89%) B- (2,67; 75-79%) C+ (2,33;70-74%)	The theme is sufficiently fully and convincingly revealed with minor deviations from it. The thesis corresponding to the topic of the essay is clearly formulated. In the main part, it is logical, connected, but the thesis put forward is not fully proved, there are single factual inaccuracies.
	Satisfactorily C (2,0;65-69%) C- (1,67;60-64%) Д+ (1,33;55-59%) Д(1,0; 50-54%)	A correct, but one-sided or insufficiently complete answer to the topic is given. Deviations from it or individual errors in the presentation of the factual material were made. The material is presented quite logically, but there are some violations of the sequence of expression of thoughts. Conclusions do not fully correspond to the content of the main part
	Unsatisfactory FX (0,5; 25-49%) F (0; 0-24%)	the topic is completely unrevealed, which indicates superficial knowledge. It is characterized by a random arrangement of the material, the lack of communication between the parts. Differs in the presence of gross speech errors.

Drawing up situational tasks

Form control	Grade	Criteria for evaluation
Drawing up situational tasks	Excellent A + (4,0; 95-100%) A- (3,76; 90-94%)	The learner showed original thinking, showed a deep knowledge of the material, interdisciplinary connections were used in the preparation of the situational task. Used scientific terminology. Identified the main symptoms of the disease, microbiological laboratory data are correct.
	Good B+ (3,33;85-89%) B- (2,67; 75-79%)	The learner, when compiling the task, made unprincipled inaccuracies, corrected by the student himself during the analysis of the task. Used scientific terminology. Identified the main symptoms

	C+ (2,33;70-74%)	of the disease, microbiological laboratory data are correct.
	Satisfactorily C (2,0;65-69%) C- (1,67;60-64%) Д+ (1,33;55-59%) Д(1,0; 50-54%)	The learner, when compiling a situational task, made inaccuracies and unprincipled mistakes, used scientific terminology. Experienced great difficulties in organizing the material. I was able to identify the main symptoms of the disease, microbiological laboratory data are indicated with slight inaccuracies.
	Unsatisfactory FX (0,5; 25-49%) F (0; 0-24%)	The learner made a situational task, made fundamental mistakes and inaccuracies. When compiling the task, he could not identify the main symptoms of the disease, and also indicated incorrect microbiological laboratory data.

Analysis of scientific articles

Form control	Grade	Criteria for evaluation
Analysis of scientific articles	Excellent A + (4,0; 95-100%) A- (3,76; 90-94%)	The work was done neatly and delivered on time, written independently on at least 5 pages of printed text. Thoughts on the problem are presented in the form of brief theses, giving arguments. In the text of the work references to the authors are indicated everywhere. When protecting the text does not read, but tells. Confidently and accurately answers all questions asked. For work, I used articles no more than 5 years old and with a high Impact factor.
	Good B+ (3,33;85-89%) B- (2,67; 75-79%) C+ (2,33;70-74%)	The work was done neatly and delivered on time, written independently on at least 4 pages of printed text. Thoughts on the problem are presented in the form of brief theses, but without giving arguments. In the text of the work references to the authors are indicated everywhere. When protecting the text does not read, but tells. When answering questions, he makes minor mistakes. For work, I used articles no more than 5 years old and with a high Impact factor.
	Satisfactorily C (2,0;65-69%) C- (1,67;60-64%) Д+ (1,33;55-59%) Д(1,0; 50-54%)	The work was done neatly and delivered on time, written independently on at least 3 pages of printed text. Thoughts on the problem are presented scattered, without giving arguments. In the text of the work references to the authors are not indicated everywhere. When protected, the text reads. Uncertainty answers questions, makes fundamental mistakes. For work, I used articles more than 5 years old and with an average Impact Factor.
	Unsatisfactory FX (0,5; 25-49%) F (0; 0-24%)	The work is written on less than 3 printed sheets. Thoughts are scattered. There are no references to the authors in the text of the work. There are no arguments. When protected, the text reads. When answering questions, he makes gross mistakes, does not orient himself in the material. For work, I used articles more than 5 years old and with a low Impact factor.

Intermediate certification

MIDTERM CONTROL

Midterm is carried out in the form of an oral answer to the questions of the ticket. Each ticket consists of 3 theoretical questions. In total, 90-100 points are given as a maximum.

Form control	Grade	Criteria for evaluation
Assessment of boundary control (oral answer to ticket questions)	Excellent A + (4,0; 95-100%) A- (3,76; 90-94%)	1) the content of the ticket material is disclosed in full; 2) the material is presented correctly, in a certain logical sequence, terminology is accurately used; 3) the ability to illustrate theoretical positions with concrete examples, to apply them in a new situation is shown; 4) the answer is independent, without leading questions; 5) one or two inaccuracies were made when covering minor issues, which are corrected after comments or leading questions.
	Good B+ (3,33;85-89%) B- (2,67; 75-79%) C+ (2,33;70-74%)	The answer mostly satisfies the requirements for an “excellent” rating, but at the same time has one of the drawbacks: 1) there are small gaps in the presentation that do not distort the essence of the content of the answer; 2) one or two shortcomings were made when covering the main content of the answer, corrected after the examiner's remark; 1) 3) an error was made or more than two shortcomings in the coverage of secondary issues, which are corrected after the examiner's remark.
	Satisfactorily C (2,0;65-69%) C- (1,67;60-64%) Д+ (1,33;55-59%) Д(1,0; 50-54%)	1) the content of the material is incompletely or inconsistently disclosed, but a general understanding of the issue and skills sufficient for further assimilation of the material are demonstrated; 2) there were difficulties or mistakes were made in the definition of concepts, the use of terminology, corrected after several leading questions; 3) with incomplete knowledge of the theoretical material, insufficient formation of competencies, skills and abilities was revealed, the student cannot apply the theory in a new situation
	Unsatisfactory FX (0,5; 25-49%) F (0; 0-24%)	1) the main content of the educational material is not disclosed; 2) ignorance or misunderstanding of the most or most important part of the educational material is revealed; 3) errors were made in the definition of concepts, when using terminology, which were not corrected after several leading questions. 4) the answer to the question is completely absent. 5) refusal to answer.

CRITERIA FOR EVALUATING THE QUALITY OF THE TRAINEE'S ANSWER TO THE TICKET AT THE MIDTERM CONTROL

The ticket consists of 3 questions. Questions 1 and 2 have a maximum of 30 points, and Question 3 has a maximum of 40 points. The maximum total is 100 points.

Criteria for evaluating student responses	Number of points for each question		
	1 question	2 question	3 question
The learner did not answer the question	0	0	0
The learner did not show even a superficial knowledge of the essence of the question posed, giving an answer in relation to any term and general concept due to the examiner's leading question	7	7	10
The learner, answering the question of the ticket, is poorly oriented in the compulsory literature, makes gross mistakes in covering fundamental, key issues.	15	15	20
When answering, the student needs additional questions, makes mistakes in the interpretation of individual, non-key points.	20	20	25
The learner correctly answers the question posed within the framework of the compulsory literature, minor single inaccuracies are possible.	25	25	30
The learner answers the question correctly, fully, uses additional literature.	30	30	40
TOTAL max for each question:	30	30	40
TOTAL max per ticket:	100		

Multi-point system of knowledge assessment

Score letter system	Digital equivalent of points	Percentage	Assessment according to the traditional system
A	4,0	95-100	Excellent
A -	3,67	90-94	
B +	3,33	85-89	Good
B	3,0	80-84	
B -	2,67	75-79	
C +	2,33	70-74	
C	2,0	65-69	Satisfactorily
C -	1,67	60-64	
D+	1,33	55-59	
D-	1,0	50-54	
FX	0,5	25-49	Unsatisfactory
F	0	0-24	

11. Learning Resources

Electronic resources, including but not limited to: databases, simulation animations, professional blogs, websites, other electronic reference materials (e.g. video, audio, digests)	№	Name	Link
	1	SKMA repository	http://lib.ukma.kz/repository
	2	Digital catalogue	http://10.10.202.52 http://89.218.155.74
	3	- For internal use	http://rmebrk.kz/
	4	- For external use	http://www.studmedlib.ru
	5	Republican interuniversity electronic library	https://online.zakon.kz/Medicine
	6	Student Advisor	https://zan.kz/ru
	7	Paragraph	https://aknurpress.kz/login
	8	"Law" base of normative legal acts	https://elibrary.ru/
	9	«BooksMed» электронды кітапханасы	http://www.booksmed.com
	10	«Web of science» (Thomson Reuters)	http://apps.webofknowledge.com
	11	«Science Direct» (Elsevier)	https://www.sciencedirect.com
	12	«Scopus» (Elsevier)	www.scopus.com
13	PubMed	https://www.ncbi.nlm.nih.gov/pubmed	
Electronic textbooks	<p>1. B. T. Seytkhanova, Sh. Zh. Kurmanbekova, Sh.T. Polatbekova, Sh.Zh. Gabdrakhmanova, A.N. Tolegen. CAUSATIVE AGENTS OF ACUTE RESPIRATORY VIRAL INFECTIOUS DISEASES (influenza virus, adenovirus, coronavirus) (I part) http://lib.ukma.kz/wp-content/uploads/2022/10/illustrated-teach.-material-eng-2.pdf</p> <p>2. B.T. Seytkhanova, Sh. Zh. Kurmanbekova, Sh.T. Polatbekova, Sh.Zh. Gabdrakhmanova, A.N. Tolegen. Pathogens of children’s viral infections (measles, rubella, chickenpox and mumps virus) (Part II) http://lib.ukma.kz/wp-content/uploads/2022/10/illustrated-textbook.pdf</p> <p>3. B.T. Seytkhanova, A.A. Abdramanova, A.N. Tolegen, P. Vinoth kumar Lecture complex on the subject "Microbiology and immunology " (General Microbiology) http://lib.ukma.kz/wp-content/uploads/2022/10/Lecture-complex-General-Microbiology-2022.pdf</p> <p>4. B.T. Seytkhanova, A.A. Abdramanova, A.N. Tolegen, P. Vinoth kumar LECTURE COMPLEX ON THE SUBJECT "MICROBIOLOGY AND IMMUNOLOGY"(Private Microbiology) http://lib.ukma.kz/wp-content/uploads/2022/10/Lecture-complex-Private-Microbiology-2022.pdf</p>		
Literature	<p>Basic literature</p> <p>1. Murray P. R., Rosenthal K. S., Pfaller M. A. Medical Microbiology. - Mosby, 2015</p> <p>2. W. Levinson McGraw-Hill. Review of Medical Microbiology and Immunology, 2014</p> <p>Additional literature</p> <p>1. Saparbekova A.A. Microbiology and virology : educ. manual. - Second Edition. - Almaty : ЭСПИ, 2023. - 188 с</p>		
12. Politics of discipline			
<ul style="list-style-type: none"> • Mandatory attendance of lectures and practical classes according to the schedule; • Do not be late for classes; • Be in special clothes in the classroom (robe, caps); • Do not miss classes, in case of a valid reason (illness, etc.) Provide a timely certificate, etc.; • Work off missed classes in accordance with the established schedule, rules and requirements; 			

ОҢТҰСТІК-ҚАЗАҚСТАН MEDISINA АКАДЕМИЯСЫ «Оңтүстік Қазақстан медицина академиясы» АҚ	 SKMA -1979-	SOUTH KAZAKHSTAN MEDICAL ACADEMY АО «Южно-Казахстанская медицинская академия»
Department «Microbiology, Virology and Immunology»		044-50/11- 12
Work program of the discipline (Syllabus)		22p. out of 24

- Active participation in the educational process;
- Comply with intra-academic rules and ethics;
- Timely and correctly perform the assigned work and task, LIW;
- Failure to complete the task, the presence of missed lectures and laboratory classes leads to a decrease in the final grade;
- If one lecture session is missed without a valid reason, the penalty point is 2 points and is deducted from the midterm control.
- If the deadline is missed without a valid reason, 0 points are given.
- If the final rating is less than 30 points, the student is not allowed to take the exam;
- Observe subordination with teachers and fellow students;
- Take care of the department's property.
- Those who have taken part in olympiads and conferences and won prizes will be exempted from OSPE/OSKE.
- In order to motivate learners, with active participation in each practical and LIWGT classes; when completing the tasks of the LIWGT with the examination of articles in journals with the impact factor Scopus, Web of science, etc., students are awarded a diploma of the 1st degree and letters of thanks to their parents.
- In order to encourage students, if the total score in the subject is between 90% and 100%, they will be awarded a letter of appreciation at the end of each semester.

13. Academic policy based on the moral and ethical values of the academy

Academic policy. P. 4 Code of honor of students

Grading policy for the discipline: The final grade of the learner at the end of the course is made up of the sum of the admission rating (ARA) and the final control grade (OIC) and is set according to the point-rating letter system. $IO = ORD + OIC$

The admission rating score (ORA) is equal to 60 points or 60% and includes: current control score (OTC) and midterm control score (ORC).

The assessment of current control (OTC) is the sum of the average grade for practical training + the average grade of SRO

The midterm control score (CQR) includes an average score of 2 colloquia.

The admission rating score (60 points) is calculated by the formula: $ORC \text{ avg} \times 0.2 + OTC \text{ avg} \times 0.4$

The final control (IC) is carried out in the form of testing and the learner can get 40 points or 40% of the total mark.

During testing, the teacher is asked 50 questions.

The calculation of the final control is carried out as follows: if the learner answered correctly 45 questions out of 50, then this will be 90%. $90 \times 0.4 = 36$ points.

The final mark is calculated if the student has positive marks both in the admission rating (RD) = 30 points or 30% or more, and in the final control (IC) = 20% or more.

Final grade (100 points) = $ORC \text{ cf} \times 0.2 + OTC \text{ cf} \times 0.4 + IC \times 0.4$

Penalty points are subtracted from the average score of the current control.

14. Approval and revision

Утверждение и пересмотр			
14.	Дата утверждения	Протокол № 100	Ф.И.О. заведующего Сейтханова Б.Т.
	23.05.2023		Подпись
	Дата одобрения	Протокол № 11	Ф.И.О. председателя КОП
	05.06.2023		Подпись
			Садькова А.Ш.

ОҢТҰСТІК-ҚАЗАҚСТАН

**MEDISINA
AKADEMIASY**

«Оңтүстік Қазақстан медицина академиясы» АҚ



SOUTH KAZAKHSTAN

**MEDICAL
ACADEMY**

АО «Южно-Казакстанская медицинская академия»

Department «Microbiology, Virology and Immunology»

044-50/11- 12

Work program of the discipline (Syllabus)

23p. out of 24

ОҢТҰСТІК-ҚАЗАҚСТАН

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044-50/11- 12

Work program of the discipline (Syllabus)

24p. out of 24