ЛД-16 ИН

Federal State Budgetary Educational Institution of Higher Education

«North-Ossetia State Medical Academy»

of the Ministry of Healthcare of the Russian Federation

ДОКУМЕНТ ПОДПИСАН
ЭЛЕКТРОННОЙ ПОДПИСЬЮ

Сертификат: 6B8F890086ADCA934F581EE025409978
Владелец: Ремизов Олег Валерьевич
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APPROVED

Rector of FSBEI HE NOSMA MOH Russia

O.V. Remizov

February 26, 2021

EDUCATIONAL TRAINING PROGRAM OF THE DISCIPLINE

"MICROBIOLOGY, VIROLOGY, IMMUNOLOGY"

the main professional educational program of higher education - specialty program in the specialty 31.05.01 General Medicine, approved in february 26, 2021

Form of Education Full-time

The period of development 6 years

The Department of Microbiology

Vladikavkaz, 2021

When developing an educational training program, the discipline is based on:

1. Federal State Educational Standard of Higher Education in the specialty **31.05.01General medicine** approved by the Ministry of Education and Science of the Russian Federation of**February 09. 2016**

2. Academic plan for specialty **31.05.01 General medicine**,
ЛД-16-06-20 ИН
approved by the Scientific Council of the Federal State Budget Educational Institution of Higher Education "NORTH OSSETIAN STATE MEDICAL ACADEMY" of the Ministryof Health of the Russian Federation of **"26" February 2021, Protocol № 4**.

The educational training program of the discipline was approved at a meeting of the department of Microbiology from**"03" February 2021, Protocol №. 7.**

The educational training program of the discipline was approved at the meeting of the Central Coordination Educational and Methodical Council of **05" February 2021, Protocol №. 3.**

The educational training program of the discipline was approved by the Scientific Council of the State Medical University of the Federal State Budgetary Educational Institution of Higher Education «North-Ossetia State Medical Academy» of the Ministry of Healthcare of the Russian Federation from **"26" February 2021, Protocol № 4.**

Developers:

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Contents of the work program

1. The name of the discipline;
2. List of planned results of training in the discipline, correlated with the planned results of the development of the educational program;
3. Indication of the place of the discipline in the structure of the educational program;
4. The amount of discipline in credit units, indicating the number of academic or astronomical hours allocated to the contact work of students with the teacher (by types of training sessions) and to the independent work of students;
5. Content of the discipline, structured according to topics (sections) indicating the number of academic or astronomical hours assigned to them and types of training sessions;
6. List of educational and methodological support for independent work of students on discipline;
7. A fund of evaluation tools for conducting intermediate certification of trainees in discipline;
8. List of basic and additional educational literature necessary for mastering the discipline;
9. List of resources of the information and telecommunication network "Internet" (hereinafter referred to as the "Internet" network), necessary for mastering the discipline;
10. Methodical instructions for students to learn the discipline;
11. List of information technologies used in the implementation of the educational process for discipline, including a list of software and information reference systems (if necessary);
12. A description of the material and technical base necessary for the implementation of the educational process for discipline;
13. Conducting educational activities using electronic training and distance learningtechnologies.

1. The list of planned learning outcomes for the discipline: "Microbiology, virology"

№ n/n	Number/ index of computers tensions		As a result of studying the academic discipline students must:			
			Know	**Know**	**How to Own**	**Evaluation Tools**
1.	OPK-7	Morphology of microbes. Microscopic research method * Control exercise *	Classification, morphology and physiology of microbes and viruses, their biological and pathogenic properties, impact on public health	To use educational, scientific, popular scientific literature, the Internet for professional activities	Immersion Microscopy	Written survey Interviewing
2.	OPK-7	Disinfectology. Influence of physical and chemical factors on microbes	Principles of asepsis, disinfection, mechanism of action of disinfectants	Usebiological equipment; with magnifying technique (microscopes, stereo and simple loops), observe safety precautions,	The main methods of sterilization, disinfection and antiseptic treatment of tools and equipment in order to avoid infection of the doctor and patient	Written survey Interviewing

3.	OPK-7	Physiology of microbes. Bacteriological method, research. Isolation of pure cultures of aerobic and anaerobic bacteria. Identification. * Control exercise *	Principles of classification of microorganisms	To use a microscope, a bacteriological loop	Technique of smear preparation, method of isolating cultures	Written survey Interviewing
4.	OPK-7	Infectious immunology. Serological method of research.	Immunity theory, types and forms of immune response	Interpret the results of x and immunological; research	Technique of setting serological reactions	Written survey Interviewing
5.	OPK-7	Immune status and methods of its study. Immunodeficiency and immunomodulatory therapy. * Control exercise *	Mechanisms of immunopathological conditions, principles of immunomodulatory therapy	Interpret the results of x and immunological; research	Methods of diagnostics of immunopathological conditions, methods of selection of immunomodulators	Written survey Interviewing

6.	OPK-7	Genetics of bacteria. Molecular-biological method of diagnosis. Polymerase chain reaction, its variants.	Features of genetic control of pathogenicity and antibiotic resistance of microbes, mechanisms of development of resistance and ways to determine it	Interpret the results of molecular biological methods of diagnosis, polymerase chain reaction, its variants	Methods for molecular genetic identification of bacteria	Written survey Interviewing
7.	OPK-7	Symbiosis. Residents and pathogens. Fungi are pathogens of fungi. Antibacterial chemotherapy	Features of the formation of processes of symbiosis of the human body with microbes, the role of the resident microflora of the organism in the development of opportunistic diseases;	Use the knowledge gained to determine the tactics of antibacterial, antiviral and immunotropic therapy; apply the principles of emergency prevention and antitoxic therapy of patients	Methods of selection of antimicrobial and immunobiologi calpreparations for adequate prevention and treatment of infectious and non-infectious diseases;	Written survey Interviewing
8.	. OPK-7	General virology. Methods of virology. Bacteriophages and phagotyping. * Control exercise *	Role of individual representatives of viruses in the etiology and pathogenesis of the main infectious diseases of man	Interpret the results of virological research methods	Technique of virological research	Written survey Interviewing

9.	OPK-7	Diagnosis of staphylo- and streptococcal infections. Determination of pathogenicity factors. Identification	Etiology, biological properties of pathogens, laboratory diagnostics	Interpret the results of microbiological research methods	Technique of microbiological research	Written survey Interviewing
10.	OPK-7	Diagnosis of epidemic meningitis and gonorrhea. * Control exercise *	Etiology, biological properties of pathogens, laboratory diagnostics	Interpret the results of microbiological research methods	Technique of microbiological research	Written survey Interviewing
11.	OPK-7	Diagnosis of diphtheria, pertussis	Etiology, biological properties of pathogens, laboratory diagnostics	Interpret the results of microbiological research methods	technique of microbiological research	Written survey Interviewing

12.	OPK-7	Diagnosis of tuberculosis, leprosy	Etiology, biological properties of pathogens, laboratory diagnostics	Interpret the results of microbiological research methods	Technique of microbiological research	Written survey Interviewing
13.	OPK-7	Diagnosis of syphilis. * Control exercise *	Etiology, biological properties of pathogens, laboratory diagnostics	Interpret the results of microbiological research methods	Technique of microbiological research	Written survey Interviewing
14.	OPK-7	Diagnosis of anaerobic infections	Etiology, biological properties of pathogens, laboratory diagnostics	Interpret the results of microbiological research methods	Technique of microbiological research	Written survey Interviewing

15.	OPK-7	Diagnosis of intestinal infections	Etiology, biological properties of pathogens, laboratory diagnostics	Interpret the results of microbiological research methods	Technique of microbiological research	Written survey Interviewing
16.	OPK-7	Diagnosis of Zoonotic Bacterial Infections	Etiology, biological properties of pathogens, laboratory diagnostics	Interpret the results of microbiological research methods	Technique of microbiological research	Written survey Interviewing
17.	OPK-7	Diagnosis of rickettsiosis, chlamydiosis, ehrlichiosis and mycoplasmosis. * Control exercise *	Etiology, biological properties of pathogens, laboratory diagnostics	Interpret the results of microbiological research methods	Technique of microbiological research	Written survey Interviewing

18.	OPK-7	Diagnosis of acute respiratory viral infection and influenza	Role of individual viruses in the etiology and pathogenesis of ARVI	Interpret the results of viral apical research methods	Technique of virological research	Written survey Interviewing
19.	OPK-7	Diagnosis of parenteral hepatitis, herpes - and HIV infection	Role of individual representatives of viruses in the etiology and pathogenesis of the main infectious diseases of man	Interpret the results of virological research methods	Technique of virological research	Written survey Interviewing Offset Practical skills transfer

3. Indication of the place of the discipline in the structure of the educational program "Microbiology, virology and immunology" - refers to the basic part of the block 1 GEF VO 31.05.01 "Medical business".

4. The volume of the discipline in credit units, indicating the number of academic or astronomical hours allocated to the contact work of students with the teacher (by types of training sessions) and to the independent work of students

Type of educational work		Total hours / credits units	Semesters	
			IV	V
			hours	hours
1		2	3	4
Classroom activities (total), including:		**178**	78	100
Lectures (L)		46	18	28
Laboratory work (LW)		132	60	72
Independent work of the student (CDS), including		**74**	30	44
Preparation for classes (LR)				
Preparing for routine monitoring (PTC)				
Preparation for Interim Control (PEP)				
Type of intermediate certification (exam)		**36**		36
TOTAL: Total labor intensity	hours	288	108	180
	Zach.ed.	8	3	5

5. Content of the discipline, structured according to topics (sections), indicating the number of academic or astronomical hours and types of training assigned to them

n / №	№ semester	Name of section academic discipline	Types of educational activities, including an independent work of students (in hours)					Forms current control succeeded bridge (weekly semester)
			L	LW	ПЗ	CDS	Total	
1	2	3	4	5	6	7	8	9
1	4	General microbiology.	4		20	8	32	
2	4	Ecology of microbes.	4		18	2	24	Testing a written, oral survey
3	4	Genetics of bacteria.	4		2	2	8	Testing a written, oral survey
4	4	General virology	2		8	4	14	Testing a written, oral survey
5	4	Symbiosis of a person with	2		4	4	10	Testing a

		microbes. Teaching about infection.						written, oral survey
6	4	Medical immunology.	2		8	10	20	Testing a written, oral survey
7	5	Private medical microbiology	16		42	22	80	Testing a written, oral survey
8	5	Private medical virology.	12		30	22	64	Testing a written, oral survey
	TOTAL:		**46**		**132**	**74**	**252 +36**	**(exam)**

6. List of educational and methodological support for independent work of students in discipline

№ semester	**Name of the teaching methodical development**
4,5	1. Collection of methodological developments in microbiology for students of medical, pediatric, medical and preventive faculties (part 1). Vladikavkaz, 2008./L.Ya. Plakhtiy, IE Tretyakova, A.K. Tadeeva, A.C. Tskhovrebov, L.V. Alborov. 2. Collection of methodological developments in microbiology for students of medical, pediatric, medical and preventive faculties. (Part 2) .Vladikavkaz, 2008. / L.Ya. Plakhtiy, IE Tretyakova, A.K. Tadeeva, 3. A manual on practical skills of the department of microbiology for students of medical, pediatric, dental and pharmaceutical faculties. / Vladikavkaz, 2010 / L.Ya.Plahtiy, I.E. Tretyakova, A.Ch. Tskhovrebov, A. K. Tadeev. 4. Methodical recommendations for the implementation of extracurricular independent work of 2nd year students of medical, pediatric, medical and preventive, pharmaceutical faculties in the cycle of microbiology, virology and immunology. Vladikavkaz. 2010./L.Ya. Plahty and the staff of the department 5. Methodological recommendations for performing independent out-of-class work of students for practical classes in microbiology, virology and immunology. / Vladikavkaz. 2010./L.Ya. Plahty and the staff of the department 6. A manual on practical skills of the department of microbiology for students of medical, pediatric, dental pharmaceutical faculties. / Vladikavkaz, 2010 / L.Ya. Plakhtiy, IE Tretyakova, A.C. Tskhovrebov, A.K. Tadeev. 7. Methodical recommendations for the performance of extracurricular independent work of 2nd year students of medical, pediatric, medical and preventive, pharmaceutical faculties in the cycle of microbiology, virology and immunology. Vladikavkaz. 2010./L.Ya. Plahty and the staff of the department. 8. Methodical recommendations for performing independent extracurricular work of 3rd year students to practical classes in microbiology, virology and immunology. / Vladikavkaz. 2010./L.Ya. Plahty and the staff of the department. 9. Methodical recommendations for students of the pediatric faculty (spring semester) / Vladikavkaz. 2016 / L.Ya. Plakhtiy, Gatieva E.I. 10. Methodical recommendations for students of the pediatric faculty (fall semester) / Vladikavkaz. 201 / L.Ya.Plahtiy, .Gatieva E.I. 11. Methodical recommendations for teachers of the pediatric faculty (spring semester) / Vladikavkaz. 2016 / L.Ya. Plakhtiy.Gatieva E.I.

	12. Methodical recommendations for teachers of the pediatric faculty (fall semester)/ Vladikavkaz. 2016 / L.Ya. Plakhtiy.Gatieva E.I. 13. Methodical recommendations for independent extracurricular work for the 2nd year students of the pediatric faculty for general microbiology (spring semester) / Vladikavkaz. 2016 // L.Ya. PlakhtiyGatieva E.I. 14. Methodical recommendations for independent extracurricular work for students of the 3rd year of pediatric faculty for general microbiology (fall semester) / Vladikavkaz. 2016 / L.Ya. Plahtiy. Gatieva E.I. 15. Immunobiological drugs used for the prevention, treatment and diagnosis of infectious diseases / Vladikavkaz. 2013 / L.Ya. Plahty and the staff of the department. 16. Collection of methodological developments for students of the pediatric faculty for the spring semester, Vladikavkaz, 2016 / Gatieva E.I. edL.Ya. Plahty 17. Collection of methodological developments for teachers for the spring semester for the pediatric faculty, Vladikavkaz, 2016 / Gatieva El. under the editorship of L.Ya. Plahty 18. Collection of methodological developments for teachers for the fall semester for the pediatric faculty, Vladikavkaz, 2016 /. under the editorship of L.Ya. Plahty 19. Fundamentals of modem immunology. Edition 4e revised. UMO of the Ministry of Health of the Russian Federation, Moscow, 2014 20. Methodical recommendations for students and doctors "Intracellular pathogens, 2015 / ed. L.Ya. Plakhtiy, collective of the department 21. Methodical recommendations for practical classes for students of lech.,Ped, stom., Mpfand farm. Faculty of Streptococcus. Microbiological diagnosis of diseases caused by pathogenic streptococci, 2015 / ed. L.Ya. Plakhtiy, collective of the department 22. A manual for students of medical schools and students of the postgraduate education system "Laboratory Diagnostics of Acute Respiratory Viral Infections, 2016 / under the editorship of L.Ya. Plakhtiy, collective of the department 23 Workbook-practical for microbiology, virology and immunology for 3-year students of medical and pediatric faculties for the autumn semester (edition2 revised, supplemented, 2014, 2016 / under the editorship of LY Plakhtiy, staff of the department 24. Work program of the academic discipline "Immunology", training direction 060103 "Pediatrics", 2015 / L.Ya. Plakhtiy, E.I. Gatieva 25. Work program of the academic discipline "Microbiology, virology", training direction 060103 "Pediatrics", 2015 L.Ya. Plakhtiy, E.I. Gatieva 26. Examination tickets for students of medical, pediatric, dental, medico-prophylactic and pharmaceutical faculties, 2014,2015, 2016/2017 L.Ya. Plahty 27. Test tasks for testing the initial level of knowledge for students of medical, pediatric,dental, medical and preventive and pharmaceutical faculties,2014,2015 / under the editorship of L. Ya. Plakhtiy , collective of the department 28. Test tasks for checking the current levtl of knowledge for students of medical, pediatric, dental, medical and preventive and pharmaceutical faculties, 2014,2015/ under the editorship of L. Ya. Plakhity, collective of the department 29. A manual for students of medical schools and students of the postgraduate education system “Fundamentals of mo‘dem immunology (edition 4 revised anf supplemented)/ UMO of the Ministry of Health of the Russian Federation-Moscow, 2014 L. Ya. Plakhity, collective of the department.

7. The fund of Evaluation Means for the Intermediate Certification of students in Discipline

№ n/n	List of competences	№ Semester	Indicator (s) assessments	The evaluation criterion(s)	Scale of assessment	Name the fund of valuation means
1	2	3	4	5	6	7
1.	OPK-7	4-5	To look the standard of an estimation of quality of formation,ut v. By order of the State Higher Medical Educational Institution of Higher Professional Education of the Ministry of Health of the Russian Federation of August 10,2018 No, 264/o	To look the standard of an estimation of quality of formation,ut v. By order of the State Higher Medical Educational Institution of Higher Professional Education of the Ministry of Health of the Russian Federation of August 10,2018 No, 264/o	To look the standard of an estimation of quality of formation,ut v. By order of the State Higher Medical Educational Institution of Higher Professional Education of the Ministry of Health of the Russian Federation of August 10,2018 No, 264/o	Examination tickets; Examination tickets for practical skills; Test assignments

8. The list of basic and additional educational literature necessary for mastering the discipline;
Main literature

№	Name	Authors	Year, A place publications	Number of copies	
				In library	At the department
1	Medical microbiology, virology and immunology. Volume 1,2 (textbook).	V.V. Zverev, M.N. Boychenko		180	8
2	Microbiology, Virology and immunology (textbook).	V. N. Tsarev.	2009, Moscow	100	8
3	Medical microbiology (textbook.)	0. K. Pozdeev	2006 Moscow	108	8
4	Microbiology, Virology and immunology. Guide to laboratory classes (tutorial).	V. B. Sboychakov	2012 Moscow	56	
5	Microbiology, Virology and immunology. Guide to laboratory classes (tutorial).	V. V. Tets	2002 Moscow	235	

Additional literature

№	Name	Authors	Year, A place publicati ons	Number of copies	
				In library	At the department
1	Medical and sanitary Microbiology, Virology and immunology	A. A. Vorobyov, A. S. Bykov, E. P. Pashkov, A. M. Rybakova	2008 Moscow	4	
2	Microbiology. Textbook for students of pharmaceutical institutes.	A. A. Vorobyov, A. S. Bykov, E. P. Pashkov, A. M. Rybakova	2003 Moscow	30	8
3	Workshop of laboratory works with illustrated situational tasks in Microbiology, immunology and Virology.	A. A. Vorobyov, V. N. Tsarev.	2008, Moscow	1	
4	Medical Microbiology, Virology and immunology (textbook).	A. A. Vorobyov	2004 Moscow	18	
5	Collection of methodological developments in Microbiology for students of medical, pediatric, medical and pharmaceutical faculties.	L. Y. Plahtiy	2008 Vladikavkaz	18	10

9. The list of resources of the information and telecommunication "Internet" (hereinafter-the "Internet") necessary for the development of the discipline:

- information and reference materials of the Ministry of health and social development of the Russian Federation;
- database on electronic components (Garant, Consultant plus "Version prof: review of legislation);
- information retrieval system of the Federal service for intellectual property, patents and trademarks;
- databases on electronic components (medical search engines-MedExplorer, MedHunt, PubMed);
- portal INFOMINE;
- MEDLINE databases, WebMedLit, national electronic library.
- http://www.elibrary.ru - scientific electronic library searches by topic, name of journal, author. It contains a catalog of Russian and foreign publications.
- http://www.studmedlib.ru -Electronic library of medical University "student Consultant". "Consultant of a student"
- www.studmedlib.ru/ru/book/ISBN9785970429143.html "Consultant of a student"
- www.studmedlib.ru/ru/book/ISBN9785970415306.html "Consultant of a student"
- www.studmedlib.ru/ru/book/ISBN9785970415306.html "the Consultant of the student»
- www.studmedlib.ru/ru/book/ISBN9785970415306.html "Consultant of a student"
- www.studmedlib.ru "Consultant of a student"
- ru.wikipedia.org -Search for articles of the free universal encyclopedia, written in Russian.Selected articles, interesting facts, the current day in history, links to thematic portals and related projects.

The program of computer testing TestPro-a package of programs for statistical data processing, teaching materials, Fund evaluation tools for the current, interim certification Educational-methodical and information support of discipline is realized by access of each student to databases and library funds. During self-study, students are provided with access to the Internet. Each student on the basic, educational program is provided with not less than one educational and one educational and methodical printed and/or electronic edition on the discipline issued for the last ±5 years.

The Fund of additional literature, in addition to educational, includes official, reference- bibliographic and periodicals in the calculation of 1-2 copies for every 100 students. Each student has access to the sets of the library Fund, consisting of at least 45 items of domestic and at least 2-.3 foreign journals from the following list:

Bulletin of normative acts of Federal bodies
Bulletin of experimental biology and medicine
Hygiene and sanitation
Journal of Microbiology, epidemiology and immunology
Clinical and laboratory diagnostics
Occupational medicine and industrial ecology
Medical newspaper
Medical Parasitology and parasitic diseases
Medical equipment
Medical Bulletin
International medical journal
Problems of social hygiene, health care and medical history
Epidemiology and infectious diseases

10. Methodical instructions for students on the development of discipline methodical instructions for students on the development of the discipline.

Training consists of classroom classes (178 hours), including a lecture course (46 hours) and laboratory work (132 hours), as well as independent work of students (74 hours). The'main training time is allocated for laboratory work on the preparation of micropreparations, bacteriological studies, the formulation of serological reactions. In the study of the discipline it is necessary to use knowledge and master practical skills

in" Microbiology. Practical classes are held in the form of laboratory work, independent practical work by students using visual AIDS, as well as solving situational problems, answers to test tasks.
The share of classes conducted in interactive forms is determined by the main goal (mission) of the program, the peculiarity of the contingent of students and the content of specific disciplines, and in General in the educational process they should be at least 5% of classroom sessions (determined by the requirements of GEF 3+ taking into account the specifics of the PLO). Classes are lecture type, for relevant groups of students may not constitute more than 30% of classes (based on the appropriate ФГОС3+).
Independent work of students involves preparation for laboratory work and includes extracurricular independent work (answers to tests, solving situational problems, assignments). Work with educational literature is considered as a type of educational work on the discipline "Microbiology" and is performed within the hours allotted for its study (in the section of the SRS). Each student is provided with access to the library collections of the Academy and the Department. For each section of the discipline developed guidelines for students " Collection of methodological developments in Microbiology for students of medical, pediatric, medical and pharmaceutical faculties. Part 1.2."and guidelines for teachers.
During the study of the discipline students independently carry out practical work, draw up protocols of laboratory work and submit to the teacher for signature. Student's work in the group forms a sense of collefctivism and sociability. Independent work of students contributes to the formation of an active life position of behavior, accuracy, discipline.
Initial level of knowledge of students is determined by testing, the current control of mastering of the subject is determined by an oral examination in the classroom, at the decision of situational tasks and the answers to the test tasks. At the end of study of discipline is carried out, the intermediate control of knowledge with use of the test control, a test of practical skills and problem solving.Questions on academic discipline included in the Final state certification of graduates.

11. Information technology.

Information technologies used in the study of the discipline (module)" Microbiology, Virology and immunology»
The share of classes held in interactive forms is 10% of classroom lessons.
Examples of interactive forms and methods of training:
-performance of creative tasks (preparation of abstract on topical issues of sanitary and private Microbiology);
- power point presentations of the results of independent work;
- discussion (group interview).

12. **Description of the material and technical base necessary for the implementation of the educational process in the discipline.**

№	Equipment name	Number	Technical condition
1	**2**	**3**	**4**
Special equipment			
1.	Thermostat	1	satisfactory
2.	Drying cabinet	1	satisfactory
3.	Sterilizer (autoclave)	1	satisfactory
4.	Microscopes	30	satisfactory
5.	Anaerostat	1	satisfactory
6.	Binocular microscope	1	satisfactory
Фантомы			
7.	-	-	-
Муляжи			

8.	-	-	-

13. Conducting educational activities using electronic training and distance learning technologies

In the context of the introduction of restrictive measures (quarantine) associated with an unfavorable epidemiological situation, the threat of the spread of a new coronavirus infection and other force majeure events that do not allow full-time training, it is possible to study this discipline or part of it using e-learning and distance educational technologies.

Teaching the discipline in the above situations will be carried out through the development of an electronic course with access to video lectures and interactive course materials: presentations, articles, additional materials, tests and various assignments. When conducting training sessions, monitoring progress, as well as intermediate certification of students, platforms of the electronic information and educational environment of the academy and / or other e-learning systems recommended for use in the academy, such as Moodle, Zoom, Webinar, etc.

Lectures can be presented in the form of audio, video, "live lectures", etc.

Conducting seminars and workshops is possible online, both synchronous and asynchronous. Seminars can be conducted in the form of web-conferences.