

MINISTRY OF HEALTH OF UKRAINE
KHARKIV NATIONAL MEDICAL UNIVERSITY
Department of Microbiology, Virology and Immunology named by prof. D.P. Grynyov
Academic year 2021-2022

SYLLABUS OF THE EDUCATIONAL COMPONENT
CLINICAL MICROBIOLOGY, VIROLOGY AND IMMUNOLOGY

Elective educational component

Full-time form of education

Field of knowledge 22 "Health care"

Specialty 222 "Medicine"

Educational and professional program "Microbiology, virology and immunology"

The second (master's) level of higher education

6th year

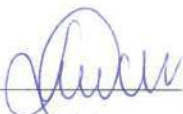
The syllabus of the discipline was approved at
the meeting of the department

Microbiology, virology and immunology
named by D. P. Grynyov

Protocol from

"30" August 2021 № 14

Head of Department



(signature) (surname and initials)


"30" _ August _ 2021

Approved by the methodical commission of
KhNMU on the problems of general and pre-
professional training

Protocol from

"31" August 2021 № 1

Chairman of the methodical commission



(signature) (surname and initials)

"31" _ August _ 2021

EDUCATIONAL DESIGNERS:

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Iryna A. Marchenko, teacher of Department of Microbiology, virology and immunology named by D. P. Grynyov, PhD

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Consultations: schedule and venue according to the schedule of the department.

Online consultations: schedule and venue by prior arrangement with the teacher.

Location: classes are held at the Department of Microbiology, virology and immunology named by D. P. Grynyov KhNMU, remotely - in Google Meet, Moodle, ZOOM, Microsoft Teams.

INTRODUCTION

The syllabus of the discipline "Clinical Microbiology, Virology and Immunology" is compiled in accordance with the educational program "Medicine" and the Standard of Higher Education of Ukraine at the Master's level, field of knowledge - 22 healthcare, specialty 222 "Medicine"

Discipline information

Semester/ Studying year: XI or XII/ 6

120 hours and 4 ECTS credits are allocated for the study of the academic discipline during 6th year (20 hours for practical classes and 100 hours for student's independent work).

General characteristic of the course

The discipline "Clinical Microbiology, Virology and Immunology" studies the origin, evolution and properties of opportunistic and pathogenic microorganisms, the role of normal microflora of the human body, relationship between microorganisms and macroorganisms, immune system and mechanisms of immune response to bacterial, viral, fungal and protozoan infections, diagnostic methods, management principles and specific prophylaxis of infectious diseases, development of infectious and inflammatory processes found in all departments of clinics (therapeutic, surgical, obstetric, pediatric, traumatological, urological and others), their properties features of the relationship with the macroorganism and methods of microbiological diagnosis. In addition, its competence includes such issues common to all clinical disciplines as nosocomial infections, normal microflora, laboratory control of sanitary and anti-epidemiological regime in health care institutions.

The course program determines the prerequisites for access to education, orientation and main focus of the program, the amount of ECTS credits required for a master's degree, a list of general and special (professional) competencies, normative and variable content of training, formulated in terms of learning outcomes and control requirements quality of higher education.

The department accepts qualified students of any race, national or ethnic origin, gender, age, people with special needs, any religion, sexual orientation, gender, veteran status or marital status for all rights, privileges, programs and activities, provided to university students.

Aim and tasks of studying the course

The purpose of studying microbiology, virology and immunology is determined by the ultimate goals set on the basis of program training for doctor in the specialty in accordance with the block of its sections (scientific training), and is the basis for building the content of the discipline. The description of goals is formulated through skills in the form of target tasks (actions). On the basis of the ultimate goals for each section, specific goals are formulated in the form of certain skills (actions), target tasks that ensure the achievement of the ultimate goal of studying the discipline.

Discipline status: elective Discipline format: mixed (provides traditional forms of classroom learning in combination with elements of e-learning with support in the Moodle and Zoom system).

Teaching methods:

- visual and practical (illustration, demonstration, experiment);
- informative (presentation, video, methodical instructions, lectures);
- scientific (participation in scientific research of department)
- control (testing, situational tasks, evaluation of practical skills).

Prerequisites and co-requisites.

The discipline "Clinical Microbiology, Virology and Immunology" are related to such disciplines as Medical Biology, Human Anatomy, Histology, Cytology and Embryology, Latin, Pathophysiology, Pathomorphology, General Hygiene, Epidemiology, Immunology and Allergology, Infection diseases.

Teaching outcomes

Outcomes of studying the discipline "Clinical Microbiology, Virology and Immunology" the student must be able to:

- Assess the state of the microbiocenosis of the human body;
- Interpret the results and perform serological tests in infectious diseases of general profile;
- Interpret the results and conduct microbiological studies of biological fluids and secretions;
- Anticipate the negative effects of dangerous factors on the human body;
- Master modern methods of microbiological research in infectious diseases of general profile;
- Analyze the principles of obtaining vaccines and immune sera, methods of their standardization and control, practical use;
- Demonstrate mastery of moral and ethical principles of attitude to a living person, his body as an object of

anatomical and clinical research.

The study of the discipline provides students with the acquisition of the following program learning outcomes:
acquisition by a person of general and special fundamental and professionally-oriented knowledge, skills, abilities, competencies necessary for the performance of typical professional tasks related to his / her activity in the medical field in the relevant position

ability to apply the acquired knowledge, skills and understanding to solve typical problems of the doctor, the scope of which is provided by lists of syndromes and symptoms, diseases, emergencies, laboratory and instrumental research, medical manipulations

evaluation of patient intake, physical examination, laboratory and instrumental research data

ability to apply the acquired knowledge about the existing health care system to optimize their own professional activities and participate in solving practical problems of the industry.

The study of the discipline provides students with the following soft skill:

1. Ability to speak out
2. Emotional intelligence (the ability to recognize the emotions and motives of others)
3. Flexibility and acceptance of criticism
4. Analytical mind
5. Ability to see and solve a problem
6. Learn
7. Willingness to perform routine work
8. Ability to make decisions
9. Responsibility

**INFORMATION ABOUT THE DISCIPLINE
"CLINICAL MICROBIOLOGY, VIROLOGY AND IMMUNOLOGY"**

Name indicators	Field of knowledge, direction of training, educational and qualification level	Characteristics of the academic discipline	
		full-time education	
Number of credits - 4.0	Educational program for training specialists of the second (master's) level of higher education training 22 "Health"	Elective component	
The total number of hours is 120	Specialty: 222 "Medecine"	Year of preparation:	
		6 th	
Hours for day form of study: classroom - 20 independent student work - 100	Educational and qualification level: master	Semester	
		11 or 12	
		Lectures	
		Practical classes	
		20 h	
		Laboratory	
		-	
		Independent work	
		100 h	
		Individual tasks:	
		Type of control: Credit	

The content of the discipline

2.2.1. List of lecture topics

Not provided by the program

2.2.2 List of seminar classes topics

Not provided by the program

2.2.3 List of practical classes topics

№	Topic	Quantity of hours	Teaching methods	Control methods
Part 1 Morphology and physiology of microorganisms. Infection. Immunity				
1	Tasks and methods of clinical microbiology. Organization of microbiological laboratories and preparation of material for research. Modern research methods in microbiological laboratories.	2	Narrative-explanation, conversation, demonstration, presentation	Oral examination, test control

2	Current state and prospects of antimicrobial chemotherapy. Mechanisms of bacterial resistance to antibiotics, clinical significance and ways to overcome it. Modern methods for determining the sensitivity of microorganisms to antibacterial drugs. Organization of chemotherapeutic services in the hospital.	2	Narrative-explanation, conversation, demonstration, presentation	Oral examination, test control
3	Normal microflora of the human body. Relationships of micro- and macroorganisms. The role of representatives of the normal microflora in the occurrence of nosocomial infections. Bacterial pathogenicity factors.	2	Narrative-explanation, conversation, demonstration, presentation	Oral examination, test control
4	Microbiological blood tests. Diagnosis of bacteremia, sepsis.	2	Narrative-explanation, conversation, demonstration, presentation	Oral examination, test control
5	Respiratory infections. The main pathogens, principles of microbiological diagnostics and proper chemotherapy.	2	Narrative-explanation, conversation, demonstration, presentation	Oral examination, test control
6	Intestinal infections. The main pathogens, principles of microbiological diagnostics and proper chemotherapy.	2	Narrative-explanation, conversation, demonstration, presentation	Oral examination, test control
7	UT infections. The main pathogens, principles of microbiological diagnostics and proper chemotherapy.	2	Narrative-explanation, conversation, demonstration, presentation	Oral examination, test control
8	Wound and burn infection. The main pathogens, principles of microbiological diagnostics and proper chemotherapy.	2	Narrative-explanation, conversation, demonstration, presentation	Oral examination, test control
9	Epidemiological control in the system of measures for	2	Narrative-explanation, conversation,	Oral examination, test control

	the prevention of nosocomial infections		demonstration, presentation	
10	Conclusion	2		Concluding test control, oral examination
Total (hours)		20		

Individual student's work

(total – 100 hours)

№	Topic	Quantity of hours	Control
1.	Methods of microbiological diagnosis of viral infections.	6	Current on practical classes
2.	Methods of microbiological diagnosis of mycoses.	6	Current on practical classes
3.	Methods of microbiological diagnosis of protozoan infections.	6	Current on practical classes
4.	Nosocomial infections. Epidemiology, etiology, clinical manifestations and microbiological diagnosis. Evolution of microorganisms that cause nosocomial infection. Problems of control, treatment and prevention of nosocomial infections.	6	Current on practical classes
5.	Methods of microbiological diagnosis of infectious diseases of the eyes and ears.	4	Current on practical classes
6.	Methods of microbiological diagnosis of infectious diseases of the CNS.	4	Current on practical classes
7.	Prepare essays to choose from:		Current on practical classes
	Etiology and epidemiology of infections caused by opportunistic pathogens. The current state of the problem.	6	Current on practical classes
	Clinically significant causative agent of respiratory infections. Haemophilus spp, Moraxella spp.	6	Current on practical classes
	Laboratory diagnosis of newborn infections.	4	Current on practical classes
	AIDS associated infections.	6	Current on practical classes
8.	Creation of schemes of laboratory diagnostics of infectious diseases.	6	Current on practical classes
9.	Practical skills		Current on practical classes
	Isolation of pure culture of the infectious causative agent.	4	Current on

			practical classes
	Identification of pure cultures of microorganisms	4	Current on practical classes
	Determine antibiotic susceptibility of bacterial cultures.	8	Current on practical classes
	Formulation and interpretation of biochemical tests, serological tests	6	Current on practical classes
10.	Preparing a review of the scientific literature or conducting research (optional):		Current on practical classes
	Monitoring of the etiological structure of nosocomial infectious agents for the selected period in Kharkiv	8	Current on practical classes
	Monitoring of the bacterial resistance to antibiotics of nosocomial infectious agents for the selected period in Kharkiv	8	Current on practical classes
11.	Preparation for the conclusion	2	Current on practical classes
Total (hours)		100	

Assessment of current learning activities

When assessing the each topic of the discipline and the conclusion, the student is graded according to the traditional 4-point system: "excellent", "good", "satisfactory" or "unsatisfactory".

The final score for the current learning activity and the conclusion is defined as the arithmetic mean of the traditional grades for each class and conclusion, rounded to 2 decimal places and listed in a multi-point scale according to the standard table.

The final score for IPA and, accordingly, the grade for the discipline is defined as the arithmetic mean of traditional grades for each lesson, rounded to 2 decimal places and converted into a multi-point scale according to the table.

The maximum number of points that a student can score for studying the discipline - 200 points, the minimum - 120 points.

Assessment of the results of the discipline is conducted directly at the last (test) lesson.

After completing the study of the discipline, the teacher puts the student's number of points in the record book and fill in the progress of students in the discipline in the form: U-5.03A - credit.

Students who do not enroll in the discipline are given "FX" or "F" ("unsatisfactory").

Table

Recalculation of the average score for current activities in a multi-point scale
(for disciplines ending with a credit)

4- score scale	200- score scale	4- score scale	200- score scale	4- score scale	200- score scale
5	200	4.22-4,23	169	3.45-3,46	138
4.97-4,99	199	4.19-4,21	168	3.42-3,44	137
4.95-4,96	198	4.17-4,18	167	3.4-3,41	136
4.92-4,94	197	4.14-4,16	166	3.37-3,39	135

4.9-4,91	196	4.12-4,13	165	3.35-3,36	134
4.87-4,89	195	4.09-4,11	164	3.32-3,34	133
4.85-4,86	194	4.07-4,08	163	3.3-3,31	132
4.82-4,84	193	4.04-4,06	162	3.27-3,29	131
4.8-4,81	192	4.02-4,03	161	3.25-3,26	130
4.77-4,79	191	3.99-4,01	160	3.22-3,24	129
4.75-4,76	190	3.97-3,98	159	3.2-3,21	128
4.72-4,74	189	3.94-3,96	158	3.17-3,19	127
4.7-4,71	188	3.92-3,93	157	3.15-3,16	126
4.67-4,69	187	3.89-3,91	156	3.12-3,14	125
4.65-4,66	186	3.87-3,88	155	3.1-3,11	124
4.62-4,64	185	3.84-3,86	154	3.07-3,09	123
4.6-4,61	184	3.82-3,83	153	3.05-3,06	122
4.57-4,59	183	3.79-3,81	152	3.02-3,04	121
4.54-4,56	182	3.77-3,78	151	3-3,01	120
4.52-4,53	181	3.74-3,76	150	< 3	Not enough
4.5-4,51	180	3.72-3,73	149		
4.47-4,49	179	3.7-3,71	148		
4.45-4,46	178	3.67-3,69	147		
4.42-4,44	177	3.65-3,66	146		
4.4-4,41	176	3.62-3,64	145		
4.37-4,39	175	3.6-3,61	144		
4.35-4,36	174	3.57-3,59	143		
4.32-4,34	173	3.55-3,56	142		
4.3-4,31	172	3.52-3,54	141		
4,27-4,29	171	3.5-3,51	140		
4.24-4,26	170	3.47-3,49	139		

Assessment of the conclusion lesson

Conclusion is conducted in accordance with the curriculum of the discipline schedule, during classes. To prepare the following materials are presented on department:

- test tasks;
- list of theoretical questions (including questions on independent work);
- list of practical skills;
- criteria for assessing the knowledge and skills of students;
- schedule of students work offs during the semester.

Evaluation system and requirements

Types of control. Assessment of students is carried out in accordance with the "Instructions for assessing the educational activities of students in the European credit transfer system for the organization of the educational process in the KhNMU."

The current educational activity of students is controlled by the teacher of the academic group. After the mastering each topic the teacher marks student using a 4-point (national) system. As a result of the semester the teacher automatically receives the average grade for the current educational activity with the help of the electronic register.

Methods of control. The current control includes following methods: individual and frontal questioning, blitz-questioning, solving situational tasks, tests, work in groups, written assignments, presentations of individual reports.

Forms of control. The final control is carried out at the last lesson, might include all forms of current control and provided by the study program of the discipline. According to the results of study activities, a credit of a two-point scale ("credit" - "non credit") is given.

The average grade for the current activity is converted to the multipoint scale for the courses which studying is finished with a credit.

Conversion of the average score for current activity into a multipoint scale

The evaluation of the study activity is carried out according to general and professional competencies and converted into the multipoint scale.

Assessment of individual student tasks

At the meeting of the department should be approved a list of individual tasks (participation in reports at student conferences, profile competitions, preparation of analytical reviews with presentations) with the definition of the number of points for their implementation, which can be added as incentives (not more than 10).

Points for individual tasks are awarded to the student only once as a commission (commission - head of the department, vice-head, group teacher) only if they are successfully completed and defended. In no case may the total amount of points exceed 120 points.

Individual tasks are performed in the form of writing research work of students / topics on the subject of the discipline being studied, within each section.

Writing essays on topics:

1. Etiology and epidemiology of infections caused by opportunistic pathogens. The current state of the problem
2. Clinically significant causative agent of respiratory infections.
Haemophilus spp, Moraxella spp.
3. Laboratory diagnosis of newborn infections.
4. AIDS-associated infections.

Assimilation of topics that are submitted only for independent work is checked during the final lesson and exam.

POLICY AND VALUES OF THE DISCIPLINE

In order to successfully complete the relevant course, it is necessary to regularly attend practical classes; to have theoretical preparation for practical classes according to the subject; not to be late and not to miss classes; perform all necessary tasks and work in each lesson; be able to work with a partner or in a group; contact the curators of the course on various issues on the subject of classes and receive it when you need it.

Students have the right to discuss various tasks, but their performance is strictly individual. It is not allowed to write off, use various software tools, tips, use electronic gadgets during classes for purposes other than the educational process. Students are not allowed to be late for practical classes.

Students are encouraged to participate in research and conferences on this topic.

Students with special questions can meet with the teacher or warn him before the start of classes, at the request of the student it can be done by the group leader. If you have any questions, please contact the teacher.

KhNMU provides training and work that is free from discrimination, sexual harassment, intimidation or exploitation. All students of KhNMU are protected by the *"Regulations on the Prevention, Prevention and Settlement of Cases Related to Sexual Harassment and Discrimination at Kharkiv National Medical University"*, which is designed to define an effective mechanism for resolving conflict situations related to discrimination and sexual abuse.

The regulation is developed on the basis of the following normative legal acts of Ukraine: the Constitution of Ukraine; Law of Ukraine "On Education"; Law of Ukraine "On Higher Education"; Law of Ukraine "On Principles of Prevention and Counteraction of Discrimination in Ukraine"; Law of Ukraine "On Ensuring Equal Rights and Opportunities for Women and Men"; Convention for the Protection of Human Rights and Fundamental Freedoms; Convention for the Suppression of Discrimination in Education; Convention on the Elimination of All Forms of Discrimination against

Women; General recommendation № 25 to paragraph 1 of Article 4 of the Convention on the Elimination of All Forms of Discrimination against Women; General Comment № 16 (2005) “Equal rights for men and women to enjoy economic, social and cultural rights” (Article 3 of the International Covenant on Economic, Social and Cultural Rights; UN Economic, Social and Cultural Rights Committee); Recommendations on education in the spirit of international understanding, cooperation and peace and education in the spirit of respect for human rights and fundamental freedoms (UNESCO); The concept of the State Social Program to ensure equal rights and opportunities for women and men for the period up to 2021.

The University recognizes the importance of confidentiality. All persons responsible for the implementation of this policy (employees of deans' offices, faculties, institutes and the Center for Gender Education, members of the student government and ethics committee, vice-rector for scientific and pedagogical work) are confidential about persons who reported or accused of discrimination or sexual harassment (except when the law requires disclosure and / or when disclosure by the University is necessary to protect the safety of others).

KhNMU creates a space of equal opportunities, free from discrimination of any national, racial or ethnic origin, sex, age, disability, religion, sexual orientation, gender, or marital status. All rights, privileges, programs and activities granted to students or staff of the University apply to all without exception, provided they are properly qualified. The anti-discrimination policy and the policy of counteracting sexual harassment of KhNMU are confirmed by the Code of Corporate Ethics and the Charter of KhNMU.

It is important for students to follow the rules of good behavior at the university. These rules are common to all, they also apply to all faculty and staff, and do not differ in principle from generally accepted norms.

Behavior in classes

It is important for students to follow the rules of good behavior at the university. These rules are common to all, they also apply to all faculty and staff, and are not fundamentally different from the generally accepted norms.

During classes it is allowed:

leave the audience for a short time if necessary and with the permission of the teacher;

drink soft drinks;

take photos of presentation slides;

take an active part in the class.

Forbidden:

eat;

smoking, drinking alcohol and even low-alcohol beverages or drugs;

to use obscene language or use words that offend the honor and dignity of colleagues and faculty;

gaff;

to damage the material and technical base of the university (damage inventory, equipment; furniture, walls, floors, litter the premises and territories);

shouting, shouting or listening to loud music in classrooms and even in corridors during classes.

Plagiarism and academic integrity. D.P. Grynyov Department of Microbiology, Virology and Immunology maintains zero tolerance for plagiarism. Students are expected to constantly raise their awareness of academic writing. On first lessons it will be provided information on what to consider plagiarism and how to properly conduct research and scientific research.

Occupational Health. The first lesson of the course will explain the basic principles of labor protection by conducting appropriate training. It is expected that every higher education seeker should know where the evacuation exit closest to the audience is, where the fire extinguisher is, how to use it, and so on.

The procedure for informing about changes in the syllabus: the necessary changes in the syllabus are approved by the methodical commission of KhNMU on problems of general and pre-professional training and published on the site of KhNMU, the site of the D.P. Grynyov Department

of Microbiology, Virology and Immunology.

Using of electronic gadgets

Using of electronic gadgets during studying is allowed without restriction except those cases when it may interfere with the ways of objective assessment of students' knowledge.

Politics of academic integrity

The plagiarism is unaccepted in the Kharkiv National Medical University. In turn the students are expected to master the recommended literature and original sources during preparation of assignments doing the references. The students are explained how to correctly cite the sources in the text, make references and describe them, how to search information.

Policy for people with the special educational needs

The studying is carried out taking into account the requirements of modern Ukrainian legislation in relation to persons with special educational needs and is regulated by the university.

Recommendations for successful mastering the discipline

In the process of preparation for practical classes students should study the recommended literature. Active participation during the discussion in the classroom is welcome, students should be ready to understand the material in detail, ask questions, express their point of view, discuss.

Incentives and penalties

According to the "Instructions for the evaluation of educational activities in the European credit-transfer system of the educational process in the KhNMU" students can increase the grade for the module by performing individual tasks (making the reports, participation in scientific conferences, competitions, preparation of reviews, etc.) in case of success gives 10 points as an incentive.

Safety precautions

The first lesson includes an explanation of the basic principles of labour protection. Every student should know the location of nearest evacuation exit, the fire extinguisher, how to use it, etc.

Procedure for informing about changes in the syllabus

The possible changes in the syllabus will be announced on the department page of the of the official website of KhNMU, in the department's directory in Moodle, and at the dean-office

5.POLITICS OF ACADEMIC INTEGRITY

The plagiarism is unaccepted in the Kharkiv National Medical University. In turn the students are expected to master the recommended literature and original sources during preparation of assignments doing the references. The students are explained how to correctly cite the sources in the text, make references and describe them, how to search information.

6. RECOMMENDED LITERATURE

1. Jawetz, Melnick, & Adelberg's Medical Microbiology, 26th Edition, 2012, English. – 880 p. – ISBN-13: 978-0071790314
2. Murray PR. Human microbiota. In: Borriello SP, Murray PR, Funke G, eds. Topley and Wilson's Microbiology and Microbial Infections: Bacteriology. 10th edition. London: HodderArnold, 2014.
3. Murray PR. Medical microbiology / Patrick R.Murray, Ken S. Rosenthal, Michael A. Pfaller; consultant, JMI Laboratories. - 8th edition. Philadelphia: Elsevier Inc, 2016.
4. World Health Organization Guidelines www.who.int
5. Center Disease Control And Prevention Instructions <https://www.cdc.gov/>

Head of the DP Grynyov department of
microbiology, virology and immunology,
professor

M.M Mishyna