


National Pirogov Memorial Medical University, Vinnytsya


"Approve"

"Agreed"

Acting Rector of higher education institution

Head of microbiology department


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"30" 08 20


professor of HEI
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"30" 08 2023 year

SYLLABUS
of academic discipline

"Infectious immunology"

Specialty	222 Medicine
Educational level	the second (master's) level
Educational programme	EPP Medicine, 2022
Academic year	2023-2024
Department	Microbiology
Lecturer (if lectures are given)	Ass. -prof. Kryzhanovska Alla V.
Contact information	Microbiology Department, microbiology@vnmnu.edu.ua, National Pirogov Memorial Medical University, Vinnytsya, Pirogov's st, 56, (0432)570379
Syllabus compiler	Ass-prof. Kryzhanovska Alla V.

1. Status and structure of the discipline

Discipline status	Elective course
Discipline code in EPP/discipline place in EPP	EC 3.2., a component of the cycle of natural science (fundamental) training disciplines
Course / semester	3 rd year (V semester)
The amount of discipline (the total number of hours / number of credits ECTS)	60 hours / 2 credits ECTS
Number of content modules	4 modules
The structure of the discipline	Lectures - 14 hours. Practical classes 16 hours. Independent work 30 hours.
Language of study	English
Form of study	Full-time (<i>or remote full-time by order</i>)

2. Description of the discipline

Short annotation of the course, relevance. The subject area of the discipline is infectious immunology. The discipline lays the foundations of specialized knowledge on the patterns of development of anti-infective immunity (non-specific, specific factors; cellular, humoral mechanisms, their interaction); features of the formation of the body's immunity to pathogens belonging to different taxonomic groups; principles of use of immunological, immunochemical, immunochromatographic, skin-allergic tests for diagnosis of infectious diseases, assessment of a condition of level of nonspecific and specific links of immunity. Acquisition of knowledge of the discipline is necessary for the implementation of effective interaction of future physicians with immunologists and is of great importance in the formation of clinical thinking of the future physician.

Prerequisites. Successful mastering of the student's discipline requires knowledge gained in the study of the following disciplines of general training: medical biology, medical and biological physics, biological and bioorganic chemistry, human anatomy, histology, cytology and embryology, Latin, history of medicine, philosophy and integrates with these disciplines.

The purpose of the course and its significance for professional activities is to obtain modern specialized knowledge on the basic mechanisms of formation of the child's immune response to bacterial, viral, fungal, protozoan infections, as a significant component of homeostasis.

Postrequisites. In the process of studying the discipline, knowledge is acquired necessary for successful mastering of training disciplines, namely: general hygiene, epidemiology, pathological physiology, pathological anatomy, immunology and allergology, infectious diseases, internal medicine, surgical diseases and other clinical disciplines, which includes integration. with these disciplines and the application of knowledge of immunology in the process of further study and professional activities.

3. Learning outcomes. After successful study of the discipline the applicant will be able to:

1. Explain the basic patterns of development of anti-infective immunity of the organism (nonspecific, specific factors; cellular, humoral mechanisms, their interaction); features of the development of immune mechanisms against pathogens belonging to different taxonomic groups; principles of using immunological, immunochemical, immunochromatographic, skin-allergic tests for the diagnosis of infectious diseases, assessment of the level of non-specific and specific parts of the immune system.

2. In the medical institution, applying a standard procedure, using knowledge about a person, his organs and systems, prescribe and analyze additional (mandatory and optional) examination methods (laboratory, functional and/or instrumental) (according to list 4: 38- 41, 54), patients

with diseases of organs and body systems for differential diagnosis of diseases (according to list 2: 179-216).

3. Carry out antimicrobial measures and adhere to the anti-epidemic regime during the collection and study of material (serum, tears, saliva), adhere to aseptic measures in the study of biological material;

4. Carry out the formulation, take into account, interpret the results, analyze the diagnostic value of the main serological reactions: agglutination, precipitation, complement fixation;

5. Take into account and interpret the results of immunochemical diagnostic reactions: RIF, ELISA, immunoblotting;

6. Take into account and interpret the results of the immunochromatographic method;

7. Interpret the results of skin allergy tests for the diagnosis of infectious diseases;

8. Take into account, analyze the results of experiments to determine the immune status of the organism;

9. Use the acquired knowledge, practical skills in the field of medicine for the study of anti-infective protection in the treatment and diagnosis of infectious diseases.

4. Content and logistic of the discipline

Module 1 Infections immunology	Semester IV 53 hours / 1,75 credits	Lectures № 1-7 Practical classes №№ 1-8 Topics for self- study №№ 1-7
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The course includes 12 topics, which are divided into 3 thematic modules.

Module 1. Infectious immunology.

Content module 1. Learning about anti-infectious immunity.

Topic 1. Subject, task of infectious immunology. The main stages of the development of anti-infective immunology.

Topic 2. The main regularities of the formation of the body's anti-infective immunity.

Content module 2. Mechanisms of non-specific reactivity of the child's body.

Topic 3. Factors of pre-immune biological mechanisms of anti-infective resistance.

Topic 4. Cellular factors of non-specific anti-infective protection.

Topic 5. Humoral factors of non-specific anti-infective protection.

Content module 3. Mechanisms of formation of specific immune protection of the body.

Topic 6. Characteristics of antigens of different groups of microorganisms.

Topic 7. Functions of classes of immunoglobulins in anti-infective protection.

Topic 8. Regulation of cellular cooperation in the formation of an anti-infective specific immune response.

Topic 9. Mechanisms of formation of a specific immune response in bacterial, viral, fungal protozoan diseases.

Content module 4. Immunological tests for the diagnosis of infectious diseases, assessment of the state of the level of immunity.

Topic 10. Diagnostic capabilities of serological reactions, which are used to diagnose bacterial, viral, fungal, protozoan diseases.

Topic 11. Diagnostic capabilities of immunological tests for the diagnosis of infections accompanied by the development of delayed-type hypersensitivity.

Topic 12. Diagnostic capabilities of tests for comprehensive assessment of the immune status of the human body.

Types of education according to the curriculum are: a) lectures, b) practical classes, c) independent work of students, d) consultations.

The lecture course discovers the problematic issues of the relevant sections of infections immunology.

Practical classes provide a theoretical justification of the main issues of the topic and the acquisition of the following practical skills:

- 1) research by students of phagocytosis activity, establishment of lysozyme titer, complement, antibodies, bactericidal activity of skin, blood serum, their evaluation independently or on the basis of demonstration experiments recorded in videos submitted in computer programs and other educational technologies;
- 2) solving situational problems in the immunological diagnosis of infectious diseases, based on the results of serological, immunochemical, immunochromatographic, skin allergy tests.

In practical classes, students write down protocols of their research in workbooks, make a summary on the topic and solve clinically-oriented situational tasks and tests.

The student's independent work involves preparation for practical classes and development of practical skills, study of topics for independent extracurricular work, preparation of presentations, tables, processing of scientific literature and writing reviews of the provided topics for individual work. Control of mastering the topics of independent extracurricular work is carried out at intermediate control classes and final control of the discipline.

Thematic plans of lectures, calendar plans of practical classes, thematic plan of independent extracurricular work, volume and directions of individual work are published on the site of the department.

The route for obtaining materials: Microbiology department / for students / Full-time education / medicine / 2 course / Educational materials / or through the link https://www.vnmu.edu.ua/microbiology_department/#. Access to the materials is carried out through the student's corporate account s000XXX@vnmu.edu.ua.

5. Forms and methods of monitoring academic performance

Current control in practical studies	Methods: oral or written survey, testing, electronic survey, solving situational problems, conducting laboratory studies, interpreting them and evaluating their results (drawing up a protocol in a workbook)
Final control (credit) of the discipline (4 semester)	Methods: testing, oral questioning (according to the Regulation of the Academic process in National Pirogov Memorial Medical University (link https://www.vnmu.edu.ua/General information))
Learning success diagnostic tools	Theoretical questions, tests, clinically-oriented situational tasks, practical tasks, practical skills demonstration

6. Assessment criteria

Knowledge assessment is carried out in accordance with the Regulations of the Academic process in National Pirogov Memorial Medical University (link <https://www.vnmu.edu.ua/General> information)

Continuous assessment	On a four point system of traditional assessments: 5 «excellent», 4 «good», 3 «satisfactory», 2 «unsatisfactory»
Control of practical skills	According to the four-point system of traditional assessments
Credit (final control)	On a 200-point scale (the arithmetic average grade for the semester is converted into points)

	Credited: 120 to 200 points Not credited: less than 122 points (See Grading Scale)
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Discipline Score Scale: National and ECTS

The sum of grades for all types of educational activities	Score ECTS	Score on a national scale	
		For exam, course project (work), practice	for credit test
180-200	A	excellent	credited
170-179,9	B	good	
160-169,9	C		
141-159,9	D	satisfactory	
122-140,99	E	satisfactory	-
61- 121,99	FX	unsatisfactory with the possibility of reassembly	is not credited with the possibility of reassembling
1-60	F	unsatisfactory with a mandatory reexamination of discipline	is not credited with mandatory reexamination of discipline

Criteria for student knowledge assessment

Assessment of oral / written response during the current assessment

The grade "excellent" is given to a student who has deeply and comprehensively mastered the theoretical material, competently and logically teaches it. He is fluent in Latin terminology, clearly answers non-standard questions on the topic of the lesson, is able to link the material of the topic with previously studied sections, which indicates knowledge of the recommended literature and the ability to analyze the material studied, and clearly demonstrates the importance of theoretical knowledge for practice. Medicine

The grade "good" is given to a student who knows and has a good theoretical material, teaches it correctly, does not allow inaccuracies in the answer, is able to reveal the topic from the standpoint of its medical significance and practical application, but the answers do not go beyond the textbook, guidelines.

A grade of "satisfactory" is given to a student who knows the basic concepts and definitions of the studied topic, but admits significant inaccuracies or has difficulty in formulating the answer, does not understand the medical aspects of the topic, can not relate theoretical material to practice.

The grade "satisfactory" is given to a student who knows the basic concepts and definitions of the studied topic, but admits significant inaccuracies or has difficulty in formulating the answer, does not understand the medical aspects of the topic, can not relate theoretical material to practice.

The grade "unsatisfactory" is given to a student who does not know the theoretical foundations of the topic, makes gross mistakes in answering, does not understand the basic concepts and definitions, can not explain the importance of theoretical material for practical medicine.

Assessment of practical skills during the current assessment

The grade "excellent" is given to a student who knows the course and sequence of independent practical work to perform a practical task, finds the best options for setting up a microbiological experiment, demonstrates the correct implementation of the necessary practical skills, and correctly formulates generalizations and conclusions, draws up a protocol.

A grade of "good" is given to a student who admits inaccuracies in the performance of microbiological practice, but is able to identify errors and can demonstrate the implementation of practical skills in general, carefully draws up research results in the protocol of the practical lesson.

Assessment of "satisfactory" is given to a student who knows the basics of the practical task, but has difficulty at performing microbiological practice, can not demonstrate the correct sequence of practical skills, can not fully interpret the results of research, sloppy protocol.

The grade "unsatisfactory" is given to a student who cannot demonstrate the performance of practical skills, experiences significant difficulties in performing microbiological practice, violates the procedure for performing practical work, does not register the progress of work in the protocol.

Evaluation of testing during the current assessment

The grade "excellent" is given to the student who at carrying out test control is allowed no more than 10% of incorrect answers (volume of correct answers 90-100%). Provides correct answers to all test questions when solving clinically-oriented test tasks.

A grade of "good" is given to a student who makes no more than 20% of mistakes during the test. (volume of correct answers 80-89%). Provides correct answers to most test questions when solving clinical-oriented test tasks.

The grade "satisfactory" is given to a student who makes mistakes in no more than 40% of test tasks (the amount of correct answers is 60.5-79%). When solving clinically-oriented test tasks, it provides the correct answers to only some questions to the test.

A grade of "unsatisfactory" is given to a student who correctly solves less than 60% of the test tasks in a test survey. When solving clinical-oriented test tasks, he cannot provide the correct answers to the test questions.

Assessment of student independent work

Assessment of independent student work is carried out during the current control of mastering the topics of the relevant content module on the basis of oral answers to theoretical questions, testing and solving situational problems on the topic for self-mastery, assessment.

Assessment of individual work of the student

Assessment of individual student work is carried out on the basis of tasks for individual work. The calculation of individual points is carried out on the basis of the provisions on the organization of the educational process at the Vinnytsia National Medical University named after MI Pyrogov (Vinnytsia, 2020). (link <https://www.vnmu.edu.ua/general-information/main-documents>):

12 points - added to the grade of the student who won a prize at the interuniversity competitions in the discipline or a prize at the All-Ukrainian competition of student research papers or a prize at the interuniversity / international scientific conference with the availability of printed work

11 points - are added to the assessment of the discipline of a student who won first place in the intra-university Olympiad in the discipline or first place in a student scientific conference with the availability of printed work, or participated in the All-Ukrainian competition of student research papers

10 points - are added to the assessment of the discipline of the student who won a prize (II-III) at the intra-university Olympiad in the discipline or at a student scientific conference with the availability of printed work; or for participation (without a prize) in interuniversity competitions in the discipline or a prize in an interuniversity / international scientific conference with the availability of printed work.

9 points - are added to the assessment of the discipline of the student who participated (without a prize) in the intra-university Olympiad in the discipline or student scientific conference with the availability of printed work

8 points - are added to the assessment of the discipline of a student who actively participated in the student scientific group, published a paper on the results of scientific research, but did not personally participate in the student scientific conference, prepared a poster report.

6-7 points - are added to the assessment of the discipline of a student who has made at least 20 microdrugs or at least 3 tables, or educational video to supplement the visual support of teaching the discipline (taking into account the volume and importance of work performed).

3-5 points are added to the assessment of the discipline of a student who has made at least 10 microdrugs or at least 2 tables, or created a thematic illustrated presentation of a specific pathogen (at least 2) to supplement the visual support of teaching the discipline, taking into account the volume and importance work).

7. Policy of discipline / course

The student has the right to receive high-quality educational services, access to contemporary scientific and educational information, qualified tutoring during the study of discipline and mastering practical skills. The policy of the department during the providing of educational services is a student-centered, based on normative documents of the Ministry of Education and the Ministry of Health of Ukraine, the Statute of the University and the Procedure for the Providing of Educational Services regulated by the main principles of the organization of the educational process in National Pirogov Memorial Medical University and the principles of academic integrity (<https://www.vnmdu.edu.ua/en/general-regulations>).

Adherence to the rules of VNMU, safety techniques in practical classes.

Observance of the rules of the VNMU regulations, safety precautions at practical classes. Instruction on biosafety, safety of handling chemical reagents and burners is conducted at the first practical lesson by the teacher. The instructed students are registered in the Safety Instruction Journal. A student who has not been instructed is not allowed to perform practical work.

Requirements for preparation for practical classes.

The student should be prepared for a practical lesson, testing tasks for the current topic should be solved in a workbook, diagrams and tables are filled.

A student should come to class on time, without delay. A student who is more than 10 minutes late is not allowed to the practical class and must work it in the prescribed manner.

In practical classes, the student must be dressed in a work uniform (medical gown, hat). Students who do not have a work uniform are not allowed to practice.

The student must follow the rules of safety in practical rooms and at the department.

When discussing theoretical issues, students should demonstrate tolerance, courtesy and respect for their colleagues and the teacher; when performing practical tasks, the workplace should be kept in order and be cleaned after performing practical work.

Usage of mobile phones and other electronic devices.

The use of mobile phones and other electronic devices in the classroom is allowed only during electronic testing or surveys.

Academic integrity. When studying the discipline, the student must be guided by the Code of Academic Integrity and Corporate Ethics of National Pirogov Memorial Medical University (link : <https://www.vnmdu.edu.ua/en/general-regulations>)/ Code of Academic Integrity). In case of violation of the norms of academic integrity during the current and final controls student receives a grade of "2" and must work it out to his teacher in the prescribed manner within two weeks after receiving an unsatisfactory assessment).

Missed classes. Missed classes are working out in the manner prescribed by Regulations of the Academic process in National Pirogov Memorial Medical University (link

<https://www.vnmdu.edu.ua/en/general-regulations>) at the time of workout schedule (published on the website of the department <https://www.vnmdu.edu.ua/> Department of Microbiology #) to the teacher on duty or with the teacher, who carries practical classes. To work out missed lesson student must provide a completed workbook protocol on the relevant topic, take a test and answer questions in writing or orally to the topic of the lesson.

The procedure for admission to the discipline final control is given in the Regulation of the Academic process in National Pirogov Memorial Medical University (link <https://www.vnmdu.edu.ua/en/general-regulations>). Students who do not have missed practical classes and lectures and received an average traditional grade of at least "3" are allowed to final control.

Additional points. As individual work is not planned, individual points are not assessed.

Conflict resolution. In case of misunderstandings and complaints to the teacher because of the quality of educational services, knowledge assessment and other conflict situations, student should submit his / her claims to the teacher. If the issue is not resolved, the student has a right to apply to the head of the department according to Complaints Consideration Procedure (<https://www.vnmdu.edu.ua/> General information / Basic documents).

Politics in terms of remote learning. Distance learning regulated by the Regulations of the elements of remote learning in National Pirogov Memorial Medical University (<https://www.vnmdu.edu.ua/en/general-regulations>). The main training platforms for studying are Microsoft Team and Google Meets. Practical classes and lectures, exercises and consultations during distance learning is published on the website of the department (<https://www.vnmdu.edu.ua/en/> Department of Microbiology / Student or [https://www.vnmdu.edu.ua/en/Department of Microbiology / News](https://www.vnmdu.edu.ua/en/Department%20of%20Microbiology%20-%20News)).

Feedback from teachers is via messengers (Viber, Telegram, WhatsApp) or e-mail (at the teacher's choice) during working hours.

Educational resources.

Educational and methodological support of the discipline is published on the website of the department (<https://www.vnmdu.edu.ua/en/> Department of Microbiology/ To students). Consultations are hold twice a week according to the schedule.

Recommended reading:

1. Medical microbiology, virology and immunology= Медична мікробіологія, вірусологія та імунологія / [Andrianova T.V., Bobyr V.V., Vinograd N.A. and others.] ; Edited by V.P.Shirobokov – Vinnitsya: Nova kniga , 2018. – 744 p.
2. Medical microbiology immunology=Медична мікробіологія та імунологія/ М.Тумків, О.Корнишчук, С.Павлій, etc. -Vinnitsya: Nova kniga , 2018. – 416 p.
3. P.R.Murrey, K.S.Rosental, M.A.Pfaller. Medical Microbiology, 8th edition, Elseiver, 2017.- 836 p.
4. Review of Medical Microbiology and Immunology, 12 edition/ Warren E. Levinson / McGraw-Hill Prof Med.-Tech., 2012. – 688 p.

1. Electronic resources:

Microbiology and immunology on-line <http://www.microbiologybook.org/>

10. The timetable and distribution of groups with assigned teachers are published on the web page of the department ((<https://www.vnmdu.edu.ua/> / Department of Microbiology / To students).

11. Questions to the final control (credit) of the discipline are published on the web page of the department (<https://www.vnmu.edu.ua/> Department of Microbiology / To students).

The syllabus of the discipline "Infections immunology" was discussed and approved at the meeting of the department (record № 1, dated "30" August 2023)

Responsible for the academic
discipline "Clinical microbiology

 Ass-prof. of HEI Alla KRYZHANOVSKA

Head of the microbiology department

 Professor HEI Valentin KOVALCHUK