

Federal State Autonomous Educational Institution of Higher Education
«Peoples' Friendship University of Russia»

Medical Institute

Recommended MCSD

SYLLABUS
(STUDY GUIDE)

Subject

Immunology

Recommended for the direction of training (specialty)

31.05.01 General Medicine

Program (profile, specialization)

General Medicine

1. Goals and objectives of the discipline:

The goal is to develop students' modern ideas about the structure and function of the immune system, the nature of immunopathology in patients.

Objectives of the discipline:

- Formation of knowledge about the structure and function of the human immune system, its age-related features, cellular and molecular mechanisms of development and functioning of the immune system, main stages, types, genetic control of the immune response, methods of immunodiagnostics.
- Formation of knowledge and skills on the application and evaluation of the results of laboratory research methods in immunodeficiency states.
- Formation of knowledge about primary immunodeficiency, HIV infection, AIDS and other secondary immunodeficiency conditions.
- Formation of knowledge about transplant immunity, principles of selection of donor and recipient, reactions of transplant rejection.
- Formation of knowledge about tolerance and autoimmunity.
- Formation of knowledge about antitumor immunity.

2. Place of the discipline in the structure of EP HE:

The discipline "Immunology" belongs to the *basic* part of block 1 of the curriculum.

Table 1 shows the previous and subsequent disciplines aimed at the formation of the discipline's competencies in accordance with the matrix of competencies of the Higher Professional Education Department.

Table № 1

Previous and subsequent disciplines aimed at the formation of competencies

№ п/п	Code and title of competence	Previous disciplines	Following disciplines (groups of disciplines)
Universal competences			
	UC-1	Physics; Mathematics; Anatomy; Biochemistry	Hygiene; Public health and health care, Healthcare economics
General Professional Competences			
	GPC-6	Life safety	Topographic anatomy and Operative surgery; Disaster Medicine
Professional Competences (type of professional activity)			
	PC-1, PC-5, PC-6	Pathophysiology, clinical pathophysiology	Epidemiology; Medical rehabilitation; Outpatient therapy; Infectious diseases; Pediatrics; Obstetrics and Gynecology

3. Requirements for the results of mastering the discipline.

The process of studying the discipline is aimed at the formation of the following competencies:

Table 2

Emerging competencies

Competences	Competence name	Indicators of achievement of competencies
UC-1	Being able to implement critical analysis of problem situations based on systems approach, develop an action strategy	<p>UC-1.1. Analysing scientific and technical literature and regulatory documents of medical institutions.</p> <p>UC-1.2. Assessing in a critical way the reliability of information sources, working with contradictory information from different sources.</p> <p>UC-1.3. Understanding the trends, strategic goals, problems in the field of healthcare/ being aware of regulatory framework to develop a strategy.</p> <p>UC-1.4. Analysing and assessing the economic potential, financial viability and risks of an organization.</p>
GPC-6	Being able to organize patient care, provide primary health care, arrange work and make professional decisions in emergency conditions at the prehospital stage, in emergency situations, epidemics and in foci of mass destruction	<p>GPC-6.1. Mastering the algorithm for providing first aid in emergency conditions, including in extreme conditions and foci of mass destruction.</p> <p>GPC-6.2. Being able to identify the conditions which require emergency medical care, including clinical signs of sudden cessation of blood circulation and respiration.</p> <p>GPC-6.3. Being able to provide emergency medical care to patients in conditions that pose a threat to the life of a patient, including clinical death (cessation of the vital bodily functions (blood circulation and (or) breathing).</p>
PC-1	Being able to provide emergency or urgent medical care to a patient	<p>PC-1.1. Being able to assess the condition of a patient who needs emergency or urgent medical care.</p> <p>PC-1.2. Being able to recognize conditions that arise from sudden acute diseases, exacerbation of chronic diseases without obvious signs of a threat to the patient's life and which require emergency medical care.</p> <p>PC-1.3. Being able to provide emergency medical care to patients with sudden acute diseases, conditions, exacerbation of chronic diseases without obvious signs of a threat to the patient's life.</p> <p>PC-1.4. Being able to recognize conditions which pose a threat to the patient's life, including conditions of clinical death (cessation of the vital bodily functions (blood circulation and/or respiration) which require emergency medical care.</p> <p>PC-1.5. Being able to provide emergency</p>

		<p>medical care to patients in conditions which pose a threat to the patient's life, including clinical death (cessation of the vital bodily functions (blood circulation and/or respiration)).</p> <p>PC-1.6. Being able to use drugs and medical devices when providing medical care in emergency or urgent forms.</p>
PC-5	<p>Being able to carry out preventive measures and measures to promote a healthy lifestyle and sanitary and hygiene education among population and monitor their effectiveness</p>	<p>PC-5.1. Being able to organize and conduct medical examinations taking into account age, health status, profession in accordance with applicable legislative acts and other documents.</p> <p>PC-5.2. Being able to organize and monitor the immunization of the adult population against infectious diseases in accordance with the current procedures for the provision of medical care, clinical guidelines (treatment protocols) on the provision of medical care taking into account the standards of medical care.</p> <p>PC-5.3. Being able to carry out medical examination of the adult population aimed at early detection of chronic noncommunicable diseases and the main risk factors for their development in accordance with the current legislative acts and other documents.</p> <p>PC-5.4. Being able to carry out follow-up care of patients with diagnosed chronic noncommunicable diseases.</p> <p>PC-5.5. Being able to prescribe preventive measures to patients taking into account risk factors in accordance with the current procedures for the provision of medical care, clinical guidelines (treatment protocols) on the provision of medical care taking into account the standards of medical care.</p> <p>PC-5.6. Being able to monitor observing preventive measures.</p> <p>PC-5.7. Being able to determine medical indications to introduce restrictive measures (quarantine) and indications for referral to a medical specialist in the event of infectious (parasitic) diseases.</p> <p>PC-5.8. Being able to issue and send an emergency notification to the territorial body of the Federal Service for Surveillance on Consumer Rights Protection and Human Wellbeing when an infectious or occupational disease is detected.</p> <p>PC-5.9. Being able to carry out anti-epidemic measures in the event of the occurrence of a focus of infection, including quarantine</p>

		<p>measures when especially dangerous (quarantine) infectious diseases are detected.</p> <p>PC-5.10. Being able to develop healthy lifestyle programmes, including the ones to reduce alcohol and tobacco consumption, prevent and combat non-medical use of narcotic drugs and psychotropic substances.</p> <p>PC-5.11. Being able to assess the effectiveness of preventive patient care.</p>
PC-6	Being able to keep medical records and organize the activities of the nursing staff	<p>PC-6.1. Being able to draw up a work plan and report on their work, issue a passport for a healthcare (therapeutic) area.</p> <p>PC-6.2. Being able to analyze morbidity, disability and mortality rates to characterize the health of the registered population.</p> <p>PC-6.3. Being able to keep medical records, including in the electronic form.</p> <p>PC-6.4. Being able to monitor the performance of official duties by a district nurse and other medical workers at the disposal.</p> <p>PC-6.5. Being able to provide internal control of quality and safety of medical activities within the scope of employment responsibilities.</p>

As a result of studying the discipline, a student must:

Know:

- structure and functions of the human immune system, its age characteristics;
- cellular and molecular mechanisms of development and functioning of the immune system, main stages, types, genetic control of the immune response, methods of immunodiagnostics;
- methods for assessing the immune status, indications and principles of its assessment;
- normal values of immunogram parameters;
- immunopathogenesis, diagnostic methods for major diseases of the human immune system,
- indications for the use of immunotropic therapy;
- rules of safety and work in the immunological laboratory with the test material, reagents, and devices.

Be able to:

- observe the safety regulations and work in the immunological laboratory with the test material, reagents, and devices;
- substantiate the need for clinical and immunological examination of the patient;
- conduct immunological diagnostics;
- distinguish the main cellular elements of the immune system by markers;
- evaluate immunograms in the diagnosis of secondary immunodeficiency;
- determine the patient's blood group (ABO, Rh), as well as the compatibility of donor and recipient blood.

Own:

- methods for assessing the immune status;
- indications and principles of immune status assessment.

4. Scope of the discipline and types of academic work

The total labor intensity of the discipline is **2 credits**.

Type of academic work	Total hours	Semesters			
		5			
Class hours (total)	51	51			
Including:	-	-		-	-
<i>Lectures</i>	17	17			
<i>Practical training (PT)</i>	34	34			
<i>Seminars (S)</i>					
<i>Laboratory research (LR)</i>					
Independent work (total)	21	21			
Total labor intensity	hours	72	72		
credit unit		2	2		

5. Content of the discipline**5.1. The content of the discipline sections**

№ п/п	Name of the section of discipline	Contents of the section
1.	General immunology	Subject and tasks of immunology. Definition of immunity. Antigens. Antibodies. The concept of the immune system. Hematopoietic stem cell. T-lymphocyte. B-lymphocyte. Natural killer cells. Monocyte-macrophage cells. Dendritic cells. Mediator and other cells in immune processes. Intercellular interactions in the immune system. Neuroimmunoendocrine interactions. Cellular cytotoxicity. Hormones and mediators of the immune system. The system complementation. Fundamentals of immunogenetics. Immune tolerance. Immanence Theory of AI.
2.	Particular immunology	Transplantation immunology. Immunology of tumors. Anti-infective immunity. Immunology of reproduction. Radiation immunology. Age-related immunology. Immunoecology. Immune biotechnology.

5.2. Sections of disciplines and types of classes

№ п/п	Name of the section of discipline	L	PT	LR	S	SRS	Total hours
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1.	Organizational and methodological foundations of rehabilitation	7	17			10	34
2.	Medical aspects of disability	10	17			11	38
	Total	17	34			21	72

6. Laboratory training (if available)

Not provided

7. Practical training (seminars) (if available)

№ п/п	№ discipline section	Themes of practical training (seminars)	Labor intensity (hours)
1.	General immunology	Historical milestones in the development of immunology. Subject and tasks of immunology. Definition of immunity. Antigens. Antibodies. The concept of the immune system. Hematopoietic stem cell. T-lymphocyte. The lymphocyte. Natural killer cells (Nk cells). Monocyte-macrophage cells. Dendritic cells. Mediator and other cells in immune processes. Intercellular interactions in the immune system. Neuroimmunoendocrine interactions. Cellular cytotoxicity. Hormones and mediators of the immune system. The complement system. Fundamentals of immunogenetics. Immune tolerance. Immanence Theory of AI	24
2.	Particular immunology	Transplantation immunology. Immunology of tumors. Anti-infective immunity. Immunology of reproduction. Radiation immunology. Age-related immunology. Immunoecology. Immanent biotechnology.	27

8. Material and technical support of the discipline:

- 1) Multimedia complexes (laptop, projector, screen)
- 2) Computer
- 3) Microscopes
- 4) The centrifuge
- 5) ELISA analyzer
- 6) Fridge
- 7) The centrifuge
- 8) Incubator-thermostat
- 9) Dispenser Pipettes
- 10) Reagents:
 - a. Diagnostic sera for determining blood groups
 - b. Diagnostic anti-rhesus sera

9. List of information technologies

Each student is provided with individual unlimited access to the following electronic library systems during the entire period of study:

1. RUDN University Electronic Library system – EBS RUDN University <http://lib.rudn.ru/MegaPro/Web>
2. University Library Online <http://www.biblioclub.ru>
3. EBS Yurayt <http://www.biblio-online.ru>
4. NEB Elibrary <http://elibrary.ru>
5. Student's Advisor www.studentlibrary.ru
6. EBS "Lan'" <http://e.lanbook.com/>
7. <http://www.aids.ru>
8. <http://immunologia.ru/>

10. Educational and methodological support of the discipline:

a) basic literature

1. Khaitov R. M. Immunology (textbook). – Moscow: GEOTAR-Media, 2020. – 720 p.
2. Kovalchuk L. V., Gankovskaya L. V., Meshkova R. Ya. Immunology (practicum). Moscow: GEOTAR-Media, 2016. – 640 p.

b) additional literature

1. Sepiashvili R. I. Fiziologiya immunoj sistemy: monografiya [Physiology of the immune system: a monograph]. – Moscow: Meditsina Zdorovye, 2019. – 338 p.
2. Allergology and Immunology: national guidelines [Edited by R. M. Khaitov and N. M. Ilina. – Moscow: GEOTAR-Media, 2016. – 656 p.

11. Methodological for students to master the discipline "Immunology"

The training of students contributes to the development of communication skills with the patient, taking into account the ethical and deontological features of pathology and patients.

To successfully master the discipline, students are required to independently prepare for practical classes, get acquainted with the recommended basic and additional literature.

Independent work of students implies preparation for practical work and includes the study of lectures, independent study of individual topics in the textbook and other literature, preparation for entrance and current control, writing an abstract. Independent work of the student contributes to the formation of students' ethical behavior, accuracy, discipline. When communicating with other participants, be polite and respectful.

12. Fund of evaluation funds for conducting intermediate certification of students in the discipline "Immunology"

Materials for assessing the level of development of the educational material of the discipline "Immunology" (assessment materials), which include a list of competencies indicating the stages of their formation, a description of indicators and criteria for evaluating competencies at various stages of their formation, a description of assessment scales, standard control tasks or other materials necessary for assessing knowledge, skills, skills and (or) experience of activities that characterize the stages of competence formation in the process of mastering the educational

program, methodological materials defining procedures for evaluating knowledge, skills, The skills and (or) experience of activities that characterize the stages of competence formation are fully developed and are available for students on the disciplines page in the RUDN University TUIS.

The program is compiled in accordance with the requirements of the FSES HE.

Developers:

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With Immunology course

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