MINISTRY OF HEALTH OF UKRAINE
ODESSA NATIONAL MEDICAL UNIVERSITY
Clinical immunology, genetics and medical biology department

APPROVED
Vice-rector on scientific-academic education professor
_____ I. P. Shmakova
"_01_" _____09_____ 2021

CURRICULUM ON CYCLE "CLINICAL IMMUNOLOGY AND ALLERGOLOGY"

Level of higher education: of the second (master's)

Field of knowledge 22 «Healthcare»

In specialty 222 «Medicine»

Educational and professional program: Medicine

Odesa 2021 – 2022

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The program is based on the educational-professional program "Medicine", training of specialists of the second (master's) level of higher education in the specialty 222 "Medicine" in the field of knowledge 22 "Health", approved by the Academic Council of ONMedU, from 04.06.2020, protocol №11 .
Developers: Doctor of Medicine, Professor S.F. Goncharuk

Program was discussed on the methodical meeting of the clinical immunology, genetics and medical biology department
Protocol №1 at 27.08.2021
Head of the department, Doctor of medicine, professor S. F. Goncharuk

The program was approved at the meeting of the subject cycle commission on medical and biological disciplines of ONMedU
Protocol №1 at 27.08.2021
Chairman of the subject cycle methodical commission on medical and biological disciplines,
Doctor of medicine, professor O.L. Appelhans

The program was approved at the meeting of the Central Coordination and Methodological Council of ONMedU
Protocol №1 at 30.08.2021

1. Description of the discipline:

Name of indicators	Characteristics of the discipline	
	Full-time education	
The total number of: Credits - 2.5 Hours - 75 Content sections - 5	Mandatory	
	Year of study	5
	Semester	IX - X
	Lectures	5 hours
	Practical classes	35 hours
	SSW	35 hours
	Including individual tasks	0
	Type of control	Differential test

2. Aims and tasks of the discipline

The purpose: of studying the discipline of clinical immunology and allergology is to form in future doctors an idea of the mechanisms of functioning of the immune system as a single complex; use of this knowledge in practice in solving specific clinical issues and atypical situational problems, as well as mastering the methods of clinical and laboratory diagnosis, treatment, prevention of immune disorders and immunodeficiency diseases underlying recurrent, chronic infectious diseases, allergic, autoimmune diseases, oncoimmune diseases, lymphoproliferative and other processes.

Main tasks:

- to get a modern idea of clinical immunology and allergology as a discipline in general;
- to form an idea of the importance of immunopathological changes in the development of various diseases and the dynamics of the general patterns of immunological parameters at different stages of the body's immune response in normal and in pathology;
- assess the patient's immune status according to the basic immunolaboratory methods and principles of interpretation of immunograms;
- to master modern principles of immunodiagnostics of allergic diseases;
- to master the basic principles of immunoprophylaxis, immunotherapy, to get acquainted with the methods of monitoring the effectiveness of immunotropic treatment, types of immunorehabilitation.

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

- **Integral competence** is the ability to solve complex problems and problems in the field of health care in the specialty "Medicine" in a professional activity or in the learning process, which involves research and / or innovation and is characterized by uncertainty of conditions and requirements.

- **General competencies:**

GC1	Ability to abstract thinking, analysis and synthesis
GC2	Knowledge and understanding of the subject area and understanding of the profession
GC3	Ability to communicate in the state language
GC5	Ability to adapt and make an informed decision in a new situation
GC6	Ability to work in a team
GC7	Ability to evaluate and ensure the quality of work performed
GC8	Ability to act on the basis of ethical considerations, socially responsible and conscious.

- **Special (professional, subject) competencies**

SC1	Communication skills and clinical examination of the patient
SC2	Ability to determine the list of necessary clinical and laboratory and instrumental studies and evaluate their results
SC3	Ability to establish an initial and clinical diagnosis of the disease
SC4	Ability to determine the principles of treatment of diseases, the required mode of work and rest and the nature of nutrition
SC5	Ability to diagnose emergencies
SC6	Ability to determine tactics and provide emergency medical care

Expected learning outcomes. As a result of studying the discipline the student must:

To know:

Structure and clinical physiology of the immune system, modern methods of its evaluation

Modern views on the etiology and pathogenesis of various immune disorders: hereditary, congenital and acquired immunodeficiency, autoimmune, allergic, cancer; immune-dependent forms of infertility and immune-dependent conditions

Possibilities and limitations of using immunological methods in the clinic

The nature of changes in immunological parameters under the influence of various factors

The main types of pathological immune reactions

Features of immunograms in pathologies of the immune system

Clinical symptoms and syndromes of different types of immunopathology and their signs

Clinical symptoms of various allergic diseases, principles of their diagnosis and treatment

Be able to:

Identify clinical, hematological and immunological signs of immune disorders in patients with acute, recurrent and chronic pathology; establish an initial and clinical diagnosis

Classify the symptoms of immunological and allergic disorders

To carry out differential diagnosis of hereditary and acquired immune disorders in various pathologies on the basis of immunological anamnesis, analysis of genealogical tree, data of clinical and laboratory examination of patients

Evaluate the data of general blood tests, immunological and allergological studies, taking into account the leading mechanism of immunological disorders in the genesis of different types of immunological and allergic pathology

To make the plan of inspection of the patient, to analyze the received data of researches taking into account immunological processes, age of the patient, a state of health, a season.

To determine the nature and principles of treatment of immunological disorders and allergic diseases in patients with various pathologies, to form multidispensary groups, risk groups, to carry out immunoprophylaxis

3. Content of the curriculum

Immune status, the principles of evaluation and methods of correction

TOPIC 1. Structure and principles of functioning of the immune system.

Determination and forms of immunity. Central and peripheral organs of the immune system. Factors of the congenital immunity: cellular (monocytic - macrophage system, killer and granulocytic cell), humoral (complement system, cytokines and others). Antigens and their characteristic. Specific immunity, its peculiarities, the stages of formation and cooperation of the immunocompetent cells, which participate in formation of the immune response. Populations (T & B-lymphocytes) and subpopulations (T - helpers of 1 and 2 types, T- regulators, T -CDL) of lymphocytes, stages of their maturing and differentiation, their functions. Immunoglobulins, structure, function. Thymus - dependent and thymus - independent mechanism of synthesis of the antibodies. Structure and properties of the circulating immune complexes. Main complex of histocompatibility: structure, property, function. Regulation of immunity.

Peculiarities of the immunological anamnesis. Clinical methods of evaluation of the immune system. Instrumental methods of evaluation of the immune system. Laboratory methods of evaluation of the immune system. Humoral congenital factors of protection. Evaluation of the cellular immunity. The complex evaluation of local immunity.

Complex approach to evaluation of the immune status of man. Immunogram, the interpretation of results. Possibilities and limitations of the immunological methods in the clinic. Peculiarities of making the immunological diagnosis.

Age peculiarities of the bone marrow, thymus and peripheral lymphoid organs. Age peculiarities of functioning of the immunocompetent cells. Age peculiarities of production of cytokines. Age peculiarities of development of the inflammatory reactions.

The role of the maternal organism in formation of the immunity of a child. The immune system of the fetus, newborn and child at different age periods.

Thymus and aging. Immunoregulatory processes in the old age. Immune theories of aging. Immunopathology in persons of the old age.

TOPIC 2. Immunologic methods of investigation. A notion of the immunogram. Basic rules of evaluation of the immune status.

A complex approach to evaluation of the human immune status. Peculiarities of the immunologic anamnesis. Clinical methods of evaluation of the immune status. Instrumental methods of evaluation of the immune status. Determination of the main symptoms and syndromes of the immune disorders.

Laboratory methods of evaluation of the immune status: humoral congenital factors of protection; evaluation of the cellular immunity; complex evaluation of local immunity.

Immunogram, interpretation of results. Possibilities and limitations of the immunological methods in clinical practice. Peculiarities of making the immunological diagnosis.

Immunodeficiency diseases and immunodependent pathology

TOPIC 3. Congenital and acquired immunodeficiency diseases

Congenital immunodeficiency diseases: definition, classification, mechanism of development. Clinical signs, immunodiagnosis, doctor’s tactics, approaches to treatment: combined, T and B–dependent immunodeficiencies, caused by disorder of the phagocytic link of i8mmunity and deficiency of protein complement.

Acquired immunodeficiency diseases: definition, causes, and the mechanisms of development, classification, and diagnostics. The role of the acquired immunodeficiency diseases in the pathogenesis of different diseases. Early detection of the secondary immunological deficiency. Basic

approaches to the treatment and prophylaxis taking into account clinical manifestations and peculiarities of the course.

The classification of immunotropic drugs, mechanism of action, side effects. Principles of clinical application of the immunotropic drugs, indications ands contraindications to their indication.

TOPIC 4. Immune aspects of autoimmune pathology

Determination of the concept of autoimmune reactions, autoimmune diseases. Mechanisms of the derangement of the immunological tolerance, the role of genetic factors. Immunodiagnosis, immunopathogenesis. The role of the immunological investigation methods in the early verification of the diagnosis of autoimmune diseases. The autoimmune components in immunopathogensis of different human diseases. Modern approaches to the application of immunotropic preparations of new generation in the treatment of patients with autoimmune pathology.

Allergic diseases

TOPIC 5. Atopic disease.

The role of genetic factors and environment in immunopathogenesis of allergy. Modern concepts of allergy and atopy. Atopy as a systemic disease.

Types and basic stages of the immunological reactions. Modern aspects of allergic diagnostics. Screening methods in evaluation of allergy. Elimination and challenge tests in allergology. Forms of skin tests.

Principles of the treatment of allergic diseases. Specific immunotherapy, indications and contraindications. Peculiarities of immunopathogenesis of bronchial asthma, polyposis, allergic rhinitis, urticaria and other drug allergies: causes, immunopathogenesis, clinical course, allergodiagnosis and preventive measures.

TOPIC 6. Allergic (non-atopic) diseases.

Classification of the reactions of hypersensitivity by Gell and Coombs. Basic mechanisms of development of immunopathologic states, their role in developments of different diseases. Mechanisms of development of anaphylactic reactions. Mechanisms of development of humoral cytotoxic reactions. Mechanisms of development of reactions of the immune complex formation. Mechanisms of development of the pathologic immune responses, mediated by the T- sensitized lymphocytes. Mechanisms of development of autosensitization, caused by antibodies.

Nonatopic diseases: forms, immunopathogenesis, immunodiagnosis, clinical manifestations and differential diagnostics. Cellular- mediated allergic diseases (serum disease, Arthus's phenomenon, allergic alveolites and others): immunopathogenesis, clinical course, immunodiagnosis, immunotherapy. Differential diagnostics of the diseases, caused by allergic processes and pseudoallergic reactions. Principles of antiallergic therapy and immunotropic methods of the treatment in allergology.

4. Structure of the discipline

Topic	Lectures	Practical classes	SSW	Individual work
The immune status, principles of evaluation and methods of correction				
Topic 1. Structure and principles of functioning of the immune system. Topic 2. Immunologic methods of investigation. Basic rules of evaluation of the immune status. Topic 3. Immune inflammation and infectious diseases. HIV-infection	3	10 5	- 15	-
Immunodeficiency diseases and immunodependent pathology				

Topic № 4. Diseases of the immune system. Immunodeficiency diseases. Principles of immunodiagnosis, immunotherapy, immunorehabilitation and immunoprevention Topic №5. Bases of transplantation immunity Topic №6. Immunology of tumors Topic №7. Immune aspects of autoimmune pathology		5 3	 10 10	-
Allergic diseases				
Topic №8. Atopic diseases Topic №9. Allergic (non-atopic) diseases	1 1	5 5		-
Final control		2		
Total:	5	35	35	-

5. THEMATIC PLAN OF LECTURES

№	Topic	Hours
1.	Principles of functioning of the immune system, clinical and laboratory evaluation of its disorders	3
2.	Allergic diseases. Classification, diagnosis and treatment, clinical examples	2
Total		5

6. THEMATIC PLAN OF PRACTICAL CLASSES

№ of the topic	Topic	Hours
1.	Structure and principles of functioning of the immune system	10
2.	Immunologic methods of investigation. Basic rules of evaluation of the immune status	5
3.	Congenital and acquired immunodeficiency diseases	5
4.	Immune aspects of autoimmune pathology	3
5.	Atopic diseases	5
6.	Allergic (non-atopic) diseases	5
	Final control	2
Total		35

7. THEMATIC PLAN OF SELF-STUDY WORK

№	Preparation to the practical classes and final module control	Hours
1.	Mechanisms of the immune protection in bacterial and viral infections. The role of the immune system in antifungal immunity and protection from helminthes. Importance of the immune system status in development of opportunistic and protozoa infections. Immunologic methods in diagnosis of infectious diseases. Immunodependent responses and complications in vaccination. Etiology, immunopathogenesis, immunodiagnosis and immunotherapy of HIV/AIDS. Dynamics of the immunogram of HIV-infected and patients with AIDS. Immunoprophylaxis of HIV-infection.	15
2.	Basic concepts, terminology (auto-, allo-, osseous transplant). Pretransplantaion	10

	monitoring. Mechanisms of rejection of the allotransplant: subacute, acute and chronic. Posttransplantation infectious complications, the criteria of diagnostics. Immunosuppressive therapy: the mechanisms of action, the principles of administration, complications. New immunological methods of diagnostics and therapy in transplantology.	
3.	Antiblastoma and problastoma mechanisms of interaction of the immune system-the organism "of the host" and "tumor". Factors of the immunological resistance of the tumour. The concept of tumour-associated antigens. Immunosuppressive action of tumors. Immune changes in oncologic patients. Immunodiagnosis, including differential one as to CD phenotype of the tumour cells. Modern approaches to immunotherapy of the patient with the oncological diseases.	10
Total		35

8. Individual student work - Not provided.

9. Teaching methods

Practical classes: conversation, solving clinical situational problems, practicing patient examination skills, training exercises on differential diagnosis and treatment of immune and allergic diseases.

Independent work: independent work with the textbook, independent work with the bank of test tasks KROK-2, independent solution of clinical problems.

10. Methods of control and criteria for evaluating learning outcomes

Ongoing control: oral examination, testing, assessment of practical skills, solving situational clinical problems, assessment of activity in the classroom.

Final control: differential test

The structure of the current assessment in the practical lesson:

1. Assessment of theoretical knowledge on the topic of the lesson:
- methods: survey, solution of situational clinical problem;
- maximum grade - 5, minimum grade - 3, unsatisfactory grade - 2.

2. Evaluation of work with the patient on the topic of the lesson:
- methods: assessment of:
a) communication skills with the patient or his parents,
b) the correctness of the appointment and evaluation of laboratory and instrumental studies,
c) compliance with the algorithm for differential diagnosis
d) justification of clinical diagnosis,
e) treatment plan
- maximum grade - 5, minimum grade - 3, unsatisfactory grade - 2

Criteria for current assessment in the practical class:

«5»	is given to the student who systematically worked during a semester, showed during examination various and deep knowledge of a program material, is able to successfully carry out tasks which are provided by the program, has mastered the maintenance of the basic and additional literature, has understood interrelation of separate sections of discipline, showed creative abilities in understanding and using educational material,

	showed the ability to independently update and replenish knowledge; confidently demonstrates practical skills during the examination of a patient and interpretation of clinical, laboratory and instrumental studies, expresses his opinion on the topic, demonstrates clinical thinking
«4»	is given to a student who has shown full knowledge of the curriculum, successfully completes the tasks provided by the program, mastered the basic literature recommended by the program, showed a sufficient level of knowledge in the discipline and is able to independently update and update during further study and professional activity; demonstrates clinical thinking
«3»	is given to the student who has shown knowledge of the basic educational program material in the volume necessary for the further training and the subsequent work on a profession, copes with performance of the tasks provided by the program, has made separate mistakes in answers on examination and at performance of examination tasks, but has the necessary knowledge to overcome mistakes under the guidance of a researcher, insecurely participates in the discussion and solution of situational clinical problems, demonstrates practical skills during the examination of a patient and interpretation of clinical, laboratory and instrumental studies with significant errors.
«2»	is given to the student who did not show sufficient knowledge of the basic educational program material, made fundamental mistakes in performance of the tasks provided by the program, cannot use the knowledge at the further training without the help of the Teacher, failed to master skills of independent work, does not participate in the discussion and solution of the situational clinical problem, does not demonstrate practical skills during the examination of a patient and the interpretation of clinical, laboratory and instrumental studies.

Final assessment

Only those students who do not have academic debt and have an average score for current academic activity of at least 3.00 are allowed to take the final assessment. Differentiated student credit is assessed on a 4-point (traditional) scale, conducted by interviewing and performing written tasks (situational task, treatment algorithm, evaluation of immunograms or leukograms, MCQs). The score for the differentiated test is the arithmetic mean for answering 2 theoretical / practical questions (one question from each of the sections: general immunology; clinical immunology and allergology) and performing 2 written tasks.

11. Distribution of points received by applicants for higher education

The grade for the discipline consists of 50.0% of the grade for the current performance and 50.0% of the grade for the exam. The average score for the discipline is translated into a national grade and converted into scores on a multi-point scale. Conversion of the traditional grade for the discipline in the 200-point is carried out by the information and computer center of the university program "Contingent".

Table for conversion of traditional assessment into multi-point:

National grade for the discipline	The sum of points for the discipline
«5»	**185 – 200**
«4»	**151 – 184**
«3»	**120 – 154**

Credits of discipline are independently converted into both the ECTS scale and the four-point scale. ECTS scale scores are not converted to a four-point scale and vice versa. Further calculating are carried out by the information computer center of the university.

Conversion of traditional assessment in the discipline and the amount of points on the ECTS scale

ECTS scale	Statistical indicator
A	Best 10% of students
B	Next 25% of students
C	Next 30% of students
D	Next 25% of students
E	The last 10% of students

The ECTS scale is given by the ONMedU educational subdivision or the dean's office after ranking the grades in the discipline among students studying in one course and in one specialty. According to the decision of the Academic Council, the ranking of students - citizens of foreign countries is recommended to be carried out in one array.

12. The list of theoretical questions to the differential test

1. The main biological tasks and functions of the immune system.
2. Classification of immune system organs. Apoptosis (concept and role in the functioning of the organism).
3. Differences between specific and nonspecific immune response.
4. The main factors of nonspecific immune response.
5. The main factors of specific (adaptive) immune response.
6. Antigen presentation: a role in the formation of the immune response. Antigen-presenting cells.
7. Phagocytosis: a role in the implementation of nonspecific and specific immune response. Phagocytes.
8. Humoral factors of nonspecific immune protection of an organism.
9. Killer cells: basic types, their functions and features.
10. Granulocytes: functions and role in the immune response. Diagnostic significance in various pathological conditions.
11. Agranulocytes: functions and role in the immune response. Diagnostic significance in various pathological conditions.
12. Complement system. Biological consequences of complement system activation. Ways of activation.
13. B-lymphocytes: markers and functions. Diagnostic significance in various pathological conditions.
14. T-lymphocytes: types and main markers. Diagnostic significance in various pathological conditions.
15. T-helpers of I and II types: differences in mechanisms of action.
16. Immunoglobulins: structure, function, classes. Diagnostic significance in various pathological conditions of IgM and IgG
17. Immunoglobulins: structure, function, classes. Diagnostic significance in various pathological conditions IgE and IgA
18. Cellular and humoral immune response of adaptive immunity: features and differences.
19. Cytokines: basic classes and their functions.

20. The major histocompatibility complex. Classes of antigens and their role in the formation of the immune response.

21. The major histocompatibility complex. Concept. Location. Mechanisms of inheritance.

22. Factors of antibacterial immune protection of an organism. Cellular and humoral immune response.

23. Antiviral immune response.

24. Mechanisms of protection of an organism against multicellular parasites.

25. Classification of immunodeficiency states. Diagnostic criteria.

26. Classification of immunodeficiency states. Primary immunodeficiency states with disorders in the humoral (B-cell) and T-cell links: basic syndromes, features of the clinical course, diagnosis, principles of therapy.

27. Classification of immunodeficiency states. Primary immunodeficiency states with deficiency of phagocyte functions, insufficiency of the complement system and combined primary immunodeficiency states: basic syndromes, features of the clinical course, diagnosis, principles of therapy.

28. Secondary immunodeficiency states: causes, classification, features of the clinical course, diagnosis, principles of therapy.

29. Classification of transplants. Mechanisms of rejection reactions. Types of rejection reactions.

30. Types of rejection reactions. Stages of rejection reactions. The concept of "pre-existing" antibodies.

31. Features of pre- and post-transplant immunological monitoring.

32. The concept of carcinogen, oncogene. Classification of oncogenes. Causes of tumors.

33. Separation of tumors by sensitivity to the immune response. The sequence of the body's immune response to the presence of a tumor.

34. The mechanism of cell-induced cytotoxicity (mechanism of action of killer cells).

35. The role and mechanisms of participation in antitumor protection of the body T-killers, T-helpers type I, natural killers, LAK-cells, specific antibodies.

36. Tumor immunoresistance factors. Tumor cell antigens. Oncomarkers.

37. Principles of tumor immunotherapy: the main groups of drugs. Immunoprophylaxis of tumors.

38. The concept of immune hypersensitivity. Classification by Jell and Coombs.

39. The concept of immune hypersensitivity. Modern classification of hypersensitivity reactions.

40. Mechanisms of development of anaphylactic reactions. Diseases caused by anaphylactic reactions.

41. Mechanisms of development of cytotoxic reactions. Diseases caused by cytotoxic reactions.

42. Mechanisms of development of immunocomplex reactions. Diseases caused by immunocomplex reactions.

43. Mechanisms of development of cell-mediated reactions. Diseases caused by cell-mediated reactions.

44. Mechanisms of development of reactions of stimulating type. Diseases caused by hypersensitivity V

45. The concept - autoimmune reaction and autoimmune disease. The differences between them. Classification of autoimmune diseases.

46. Methods of diagnosis of autoimmune diseases.

47. Principles of treatment of autoimmune diseases.

48. The causes of allergic pathology. Stages of pathogenesis of allergic reactions.

49. Classification of allergens.

50. Pseudo allergy: concepts and causes.

51. Allergic history (components). Clinical manifestations of allergic diseases. Provocative tests with allergens.

52. Laboratory methods for diagnosing allergic diseases.

53. Skin allergy tests: types; methods of conducting; interpretation of results.

54. Allergy medications: groups of drugs and the main representatives.

55. Antihistamines. The difference between antihistamines of the first generation from the second.

56. Corticosteroids for the course of therapy of atopic diseases and emergency care.

57. Asthma maintenance and reliever therapy: groups of drugs and the main representatives.

The list of practical skills, the acquisition of which is controlled during the differential test

1. Assessment of the immune status of the organism on the basis of leukogram and immunogram.

2. HIV / AIDS: etiology, features of the clinical course; diagnostics; differential diagnosis; principles of therapy and prevention.

3. Clinical criteria characterizing of primary and secondary immunodeficiency states.

4. Serum sickness (clinical manifestations, diagnosis, principles of treatment).

5. Exogenous allergic alveolitis (classification, clinical manifestations, diagnosis, principles of treatment).

6. Rheumatic arthritis (clinical manifestations, diagnostic criteria, principles of treatment).

7. Systemic lupus erythematosus (clinical manifestations, diagnostic criteria, principles of treatment).

8. Criteria for the diagnosis of bronchial asthma.

9. Criteria for the diagnosis of intermittent bronchial asthma.

10. Criteria for diagnosis of mild persistent bronchial asthma.

11. Criteria for diagnosis of moderate persistent bronchial asthma.

12. Criteria for diagnosis of severe persistent bronchial asthma.

13. The concept of control of bronchial asthma.

14. Prescribe grade therapy for bronchial asthma (step I).

15. Prescribe grade therapy for bronchial asthma (step II).

16. Prescribe step therapy for bronchial asthma (step III).

17. Prescribe step therapy for bronchial asthma (step IV).

18. Prescribe treatment to a patient with exacerbation of bronchial asthma in the outpatient and inpatient stages.

19. Assign examination and treatment of a patient with perennial allergic rhinitis (mild and moderate).

20. Assign examination and treatment of a patient with seasonal allergic rhinitis (mild and moderate).

21. Algorithm of treatment measures for anaphylactic shock.

22. Prescribe treatment for an acute local allergic reaction caused by an insect bite.

23. Prescribe treatment for an acute systemic allergic reaction caused by an insect bite.

24. Prescribe emergency care to a patient with acute allergic urticaria and angio edema.

25. Algorithm of medical care for a patient with drug allergy with a local reaction in the form of a predominant skin lesion.

26. Evaluate the results of laboratory tests (leukogram, immunogram) in a patient with atopic disease.

27. Methods of peak flowmetry and evaluation of its results. The most common parameters measured in spirometry

28. Hypoallergenic diet.

13. Methodical support:

- Curriculum of the discipline
- The syllabus of the discipline
- Textbook: Bajora YI, Goncharuk SF Clinical immunology and allergology. Textbook: ed. 4th, add. // Odessa: Press - Courier, 2018. - 264 p.
- Multimedia presentations
- Situational clinical tasks
- Methodical development of practical classes
- Electronic bank of test tasks by divisions of the discipline.

14. Recommended literature

Main:

1. Immunology /I. Roitt, J. Brostoff, D. Male, D. Roth. – 7th ed. // Mosby, 2006. – 564 p.

2. Immunology: Understanding the Immune System /Klaus D. Elgert. – 2nd ed. // Wiley-Blackwell, 2009. – 726 p.

3. Patterson's Allergic Diseases (Allergic Diseases: Diagnosis & Management) /Leslie C. Grammer, Paul A. Greenberger. – 7th ed. // Lippincott Williams & Wilkins, 2009. – 736 p.

4. Clinical immunology and allergology (the teaching aid) / Ju.I.Bazhora, S.F.Goncharuk, A.V.Kasyanenko // Odessa, Press-courier, 2011. – 212 c.

5. Bazhora Yu.I., Goncharuk S.F., Kasyanenko A.V., Vachnenko A.V. Clinical immunology and allergology (the textbook) / Затверджено МОН України як підручник для студентів вищих навчальних закладів // Vinnytsia: Nova Knyha, 2014. – 272 p.: il.

Additional:

1. Oxford Handbook of Clinical Immunology and Allergy /G. Spickett. – 2nd ed. // Oxford University Press, USA, 2006. – 584 p.

2. Clinical Immunology: Disease, Principles, Mechanisms /J. Bellanti. – 1st ed. // Informa Health Care, 2010. – 500 p.

3. Clinical Immunology: Principles and Practice /Robert R. Rich, Thomas A. Fleisher, William T. Shearer, Harry W. Schroeder, Anthony J. Frew, Cornelia M. Weyand. – 3rd ed. // Mosby, 2008. – 1616 p.

4. Immunology for Medical Students /R. Nairn, M. Helbert – 2nd ed. // Mosby, 2006. – 320 p.

5. EAACI European Academy of Allergy and Clinical Immunology White Paper on Research, Innovation and Quality Care. Published by the European Academy of Allergy and Clinical Immunology 2018

6. Global Atlas of ALLERGY. Published by the European Academy of Allergy and Clinical Immunology 2014.

7. GLOBAL ATLAS OF SKIN ALLERGY. Published by the European Academy of Allergy and Clinical Immunology 2019.

8. Basic immunology : functions and disorders of the immune system / Abul K. Abbas, Andrew H. Lichtman, Shiv Pillai ; Illustrations by David L. Baker, Alexandra Baker. -- Fifth edition. 318 p. ; cm. Includes bibliographical references and index.

9. ISBN 978-0-323-39082-8 I. Lichtman, Andrew H., author. II. Pillai, Shiv, author. III. Title. [DNLM: 1. Immunity. 2. Hypersensitivity. 3. Immune System--physiology. 4. Immunologic Deficiency Syndromes. QW 504] QR181 616.07’9--dc23.

10. 5th Edition of Clinical Immunology: Principles and Practice / Robert R. Rich. Elsevier – 2019. C. – 1323.

15. Electronic information resources

http://moz.gov.ua
https://elifesciences.org/subjects/immunology-inflammation
https://www.eaaci.org/
https://www.facebook.com/EAACI
http://aalu.org.ua/
https://allergy.immunologyconferences.com/events-list/asthma
https://www.immunopaedia.org.za/
https://www.worldallergy.org/meetings