

SYLLABUS

concerning the cycle of education 2021-2027

(date range)

1.1. BASIC INFORMATION CONCERNING THIS SUBJECT / MODULE

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| Subject / Module | Clinical Immunology |
| Course code / module * | ImK / C |
| Faculty of (name of the leading direction) | Medical College of Rzeszów University |
| Department Name | Medical College of Rzeszów University |
| Field of study | medical direction |
| Level of education | uniform master's studies |
| Profile | practical |
| Form of study | stationary / extramural |
| Year and semester | year V, semester X |
| Type of course | obligatory |
| Coordinator | Dr hab. Jacek Tabarkiewicz |
| First and Last Name of the Teacher | |

* - According to the resolutions of the Faculty of Medicine

1.2. Forms of classes, number of hours and ECTS

| Lecture | Exercise | Conversation | Laboratory | Seminar | ZP | Practical | Self-learning | Number of points ECTS |
|---------|----------|--------------|------------|---------|----|-----------|---------------|-----------------------|
| 15 | 15 | - | - | 15 | - | - | - | 4 |

1.3. The form of class activities

☒ classes are in the traditional form

☐ classes are implemented using methods and techniques of distance learning

1.4. Examination Forms / module (exam, credit with grade or credit without grade)

2. REQUIREMENTS

Basic immunology. Laboratory diagnosis. Propedeutics of oncology. Propaedeutics of internal diseases. Propedeutics of pediatrics.

3. OBJECTIVES, OUTCOMES, AND PROGRAM CONTENT USED IN TEACHING METHODS

3.1. Objectives of this course/module

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| C1 | Understanding of immune disorders in the pathomechanism of human diseases. |
| C2 | Ability to use methods of testing immunological parameters and the principles of selection of tests in differential diagnosis of human diseases. |
| C3 | Ability to use immunostimulation, immunoregulation, immunomodulation, immunosuppression in the therapy of human diseases. |

3.2 OUTCOMES FOR THE COURSE / MODULE (TO BE COMPLETED BY THE COORDINATOR)

| EK (the effect of education) | The content of the learning effect defined for the subject (module) | Reference to directional effects (KEK) |
|------------------------------|---|--|
| EK_01 | knows the basics of development and mechanisms of the immune system, including specific and non-specific mechanisms of humoral and cellular immunity | C.W20 |
| EK_02 | describes the major histocompatibility complex | C.W21 |
| EK_03 | knows types of hypersensitivity reactions, types of deficiencies | C.W22 |
| EK_04 | knows issues in the field of cancer immunology | C.W23 |
| EK_05 | knows the issues of resistance and the basics of immunomodulation; defines the genetic basis of selection of donor and recipient and the basis of transplantation immunology | C.W24 |
| EK_06 | knows the basic directions of therapy development, in particular the possibilities of cell therapy and gene therapy and targeted therapy in specific diseases | C.W41 |
| EK_07 | knows the principles of nutrition for healthy and sick children, immunization and keeping the child's health balance | E.W2 |
| EK_08 | knows and understands the causes, symptoms, principles of diagnosis and therapeutic treatment in the case of the most common diseases of children: c) acute and chronic diseases of the upper and lower respiratory tract, congenital defects of the respiratory system, tuberculosis, cystic fibrosis, asthma, allergic rhinitis, urticaria, anaphylactic shock, angioedema edema, d) anemia, haemorrhagic diathesis, bone marrow failure, childhood cancers, including solid tumors typical of childhood; f) acute and chronic abdominal pain, vomiting, diarrhea, constipation, gastrointestinal bleeding, peptic ulcer disease, inflammatory bowel | E.W3 |

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| | <p>disease, pancreatic disease, cholestasis and liver diseases, and other acquired and congenital gastrointestinal disorders,</p> <p>g) growth disorders, thyroid and parathyroid diseases, adrenal diseases, diabetes, obesity, puberty disorders and gonadal function,</p> <p>k) connective tissue diseases, rheumatic fever, juvenile arthritis, systemic lupus, dermatomyositis,</p> | |
| EK_09 | <p>knows and understands the causes, symptoms, principles of diagnosis and therapeutic treatment in relation to the most common internal diseases occurring in adults and their complications:</p> <p>b) respiratory diseases, including: respiratory diseases, chronic obstructive pulmonary disease, bronchial asthma, bronchiectasis, cystic fibrosis, respiratory infections, interstitial lung diseases, pleura, mediastinum, obstructive and central sleep apnea, respiratory failure (acute and chronic)), respiratory cancers,</p> <p>c) diseases of the digestive system, including diseases of the mouth, esophagus, stomach and duodenum, intestines, pancreas, liver, bile ducts and gallbladder,</p> <p>d) diseases of the endocrine system, including diseases of the hypothalamus and pituitary, thyroid, parathyroid, cortex and adrenal medulla, ovaries and testicles, as well as neuroendocrine tumors, polyglandular syndromes, various types of diabetes and metabolic syndrome: hypoglycaemia, obesity, dyslipidemia,</p> <p>f) hematopoietic system diseases, including: bone marrow aplasia, anemia, granulocytopenia and agranulocytosis, thrombocytopenia, acute leukemias, myeloproliferative and myelodysplastic-myeloproliferative tumors, myelodysplastic syndromes, mature B and T cell tumors, bleeding disorders, thrombophilia, imminent life-threatening conditions in hematology, blood disorders in diseases of other organs;</p> <p>g) rheumatic diseases, including: connective tissue systemic diseases, systemic vasculitis, arthritis with spine involvement, bone metabolic diseases, in particular osteoporosis and osteoarthritis, gout,</p> <p>h) allergic diseases, including: anaphylaxis and anaphylactic shock and angioedema,</p> | E.W7 |
| EK_10 | <p>knows and understands the course and symptoms of the aging process, as well as the principles of overall geriatric assessment and interdisciplinary care in relation to the elderly patient</p> | E.W8 |
| EK_11 | <p>knows and understands the causes, symptoms, principles of diagnosis and therapeutic treatment in the most common diseases of the nervous system, including:</p> <p>d) infections of the nervous system, in particular meningitis, Lyme disease, herpetic encephalitis, neurotransmission diseases,</p> | E.W14 |

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| | g) Demineralization diseases, in particular multiple sclerosis | |
| EK_12 | knows the possibilities of modern cancer therapy (including multimodal therapy), perspectives of cell and gene therapies and their undesirable effects | E.W25 |
| EK_13 | knows and understands the causes, symptoms, principles of diagnosis and therapeutic and prophylactic treatment in the most common bacterial, viral, parasitic and fungal diseases, including pneumococcal infections, viral hepatitis, acquired AIDS immune deficiency, sepsis and nosocomial infections | E.W32 |
| EK_14 | knows the basic features, environmental and epidemiological conditions of the most common human skin diseases | E.W33 |
| EK_15 | knows the types of biological materials used in laboratory diagnostics and the principles of collecting material for testing | E.W37 |
| EK_16 | knows the reproductive functions of women, related disorders, as well as diagnostic and therapeutic procedures concerning, in particular: a) menstrual cycle and its disorders, b) pregnancy | F.W9 |
| EK_17 | uses antigen-antibody challenge in current modifications and techniques for diagnostics of infectious, allergic, autoimmune diseases, blood and cancer diseases | C.U8 |
| EK_18 | combines images of tissue and organ damage with clinical symptoms of the disease, medical history and results of laboratory tests | C.U11 |
| EK_19 | analyzes the reactive, defensive and adaptive phenomena and regulation disturbances caused by the etiological factor | C.U12 |
| EK_20 | plans and performs simple scientific research and interprets its results and draws conclusions | B.U14 |
| EK_21 | plans diagnostic, therapeutic and prophylactic procedures | E.U16 |
| EK_22 | interprets laboratory tests and identifies the causes of deviations | E.U24 |
| EK_23 | applies nutritional treatment (including enteral and parenteral nutrition) | E.U25 |
| EK_24 | qualifies the patient for vaccination | E.U27 |
| EK_25 | collects material for tests used in laboratory diagnostics | E.U28 |
| EK_26 | plans specialist consultations | E.U32 |
| EK_27 | he is guided by the good of the patient, placing them in the first place | K.02. |

3.3 CONTENT CURRICULUM (filled by the coordinator)

A. Lectures

Course contents

1. Stem cells - a type, use in the therapy of human diseases
2. Skin as an element of the immune system
3. Aging of the immune system
1. 4. Diet and the immune system. Immunonutrition

B. Exercises, Seminars**Course contents of the exercises**

1. The rules for the selection of donor and recipient
2. Modern methods of assessing donor-recipient compliance
3. Transplant immunology.
4. Mechanisms of action of immunosuppressive drugs used in transplantology
5. Immunological basis of transplant rejection and other transplantation complications, eg GVHD
6. Autoimmune diseases. The role of the immune system in the pathogenesis of rheumatic diseases, selected diseases of the gastrointestinal tract, nervous system, endocrine system. The use of immunological parameters in diagnostics. Immunological basis of therapy for autoimmune diseases.
7. Advanced medical therapies using elements of the immune system.
8. Hospital applications of advanced therapy medicinal products (HE-ATMP)
9. Working principles in the GMP environment
10. Principles of conducting and use of Tissue and Cell Banks
11. Allergic diseases. Basic definitions. Allergens. Etiopathogenesis. Diagnostics with particular emphasis on antigen-antibody. Treatment with special emphasis on immunotherapy specific.

Course contents of the seminar

1. Causes, symptoms, principles of diagnosis and therapeutic and prophylactic treatment (qualification for protective vaccinations and immunomodulation) in the most common bacterial, viral, parasitic and fungal diseases, including pneumococcal infections, hepatitis, acquired immunodeficiency AIDS, sepsis and nosocomial infections - with particular emphasis on specific and nonspecific immune responses.
2. Cancer oncogenesis and immunology - aberrations of autosomes and heterosomes that cause disease, including cancer:
3. Oncogenesis mechanisms.
4. Tumors with a known etiological factor.
5. Antigens related to cancer.
6. Immune diagnosis of tumors.
7. Gene therapy, targeted and cellular therapy.
8. Antibody as a medicine.
9. Use of monoclonal antibodies
10. The use of IVIG.
11. Immunosuppressive and immunomodulating treatments.
12. Reproductive immunology
13. Immunohematology. Immunopathogenesis of proliferative diseases of the hematopoietic system. Acquired haemorrhagic diathesis as an

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| autoimmune disease. |
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3.4 TEACHING METHODS

Lecture: lecture with multimedia presentation

Exercises, Seminars: working in groups, solving tasks, discussion

4 METHODS AND EVALUATION CRITERIA

4.1 Methods of verification of learning outcomes

| Symbol of effect | Methods of assessment of learning outcomes (Eg.: tests, oral exams, written exams, project reports, observations during classes) | Form of classes |
|------------------|--|------------------------------|
| EK_01-26 | colloquium, exam | Exercises, Seminars, Lecture |
| EK_27 | observations during the class | Exercises |

4.2 Conditions for completing the course (evaluation criteria)

Lectures - pass with oral or written assessment

test pass and open questions:

A: Questions in the field of messages to remember;

B: Questions in the field of speech to understand;

C: Solving a typical written task;

D: Solving an atypical writing task;

- for insufficient solution of tasks only from areas A and B = grade 2.0

- for solving tasks only from areas A and B, the possibility of obtaining max. rating 3.0

- for solving tasks from the area A + B + C, the possibility of obtaining max. evaluation 4.0

- for the solution of tasks in the area A + B + C + D, the possibility of obtaining a rating of 5.0

classes, seminars - credit with grade including student's skills, full participation in classes, grades from partial tests

Knowledge assessment:

5.0 - the student demonstrates knowledge of each of the education content at the level of 88-100%

4.0 - the student demonstrates knowledge of each of the content of education at the level of 74-87%

3.0 - the student has knowledge of each of the content of education at the level of 60-73%

2.0 - the student has knowledge of each of the contents of education below 60%

Skill assessment:

5.0 - the student actively participates in the classes, is well prepared, correctly interprets the dependencies and is able to draw the right conclusions, recognizes correctly under the microscope the basic structural elements

4.5 - the student actively participates in classes, with little help from the teacher, correctly interprets the occurring phenomena, recognizes the basic structural elements correctly under the microscope

4.0 - the student actively participates in classes, with more help from the teacher, he is improved, he cannot always solve the problem himself and recognize the basic structural elements under the microscope

3.5 - the student participates in classes, his scope of preparation does not allow for a comprehensive presentation of the discussed problem, he draws incorrect conclusions without help and incorrectly recognizes under the microscope the basic structural elements

3.0 - the student participates in classes, formulates conclusions requiring correction from the teacher, but commits minor mistakes, not fully understanding the causal relationships and connections, commits a lot of errors while recognizing under the microscope the basic structural elements

2.0 - the student passively participates in classes, his statements are incorrectly substantive, he does not understand problems, he incorrectly recognizes basic structural elements under the microscope

5. Total student workload required to achieve the desired result in hours and ECTS credits

| Activity | Hours / student work |
|---|----------------------|
| Hours of classes according to plan with the teacher | 45 |
| Preparation for classes | 45 |
| Participation in the consultations | 3 |
| The time to write a paper / essay | 25 |
| Preparation for tests | 40 |
| Participation in colloquia | 2 |
| Other (e-learning) | - |
| SUM OF HOURS | 160 |
| TOTAL NUMBER OF ECTS | 4 |

6. TRAINING PRACTICES IN THE SUBJECT / MODUL

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|-----------------------------------|---|
| Number of hours | - |
| Rules and forms of apprenticeship | - |

6. LITERATURE

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| <p>READING:</p> <ol style="list-style-type: none"> 1. Immunologia. J. Gołąb, M. Jakóbisiak, W. Lasek, T. Stokłosa, Wydawnictwo Naukowe PWN, Warszawa 2012. 2. Immunologia. D. Male, J. Brostoff, D.B. Roth, I. Roitt, wydanie polskie pod red. J. Żeromskiego. Elsevier Urban & Partner, Warszawa 2008, wydanie 2. 3. Podstawy immunologii. W. Ptak, M. Ptak, M. Szczepanik, Wydawnictwo PZWL Warszawa |
| <p>Additional literature:</p> <ol style="list-style-type: none"> 1. Krótkie wykłady – immunologia. P.M. Lydyard, A. Whelan, M.W. Fanger, Wydawnictwo Naukowe PWN, warszawa 2012. |

2. Immunologia, podstawowe zagadnienia i aktualności. W. Lasek,
Wydawnictwo Naukowe PWN, Warszawa 2005
3. Immunologia kliniczna. M. Haeney, H. Chapel, S. Misgah, N. Snowden,
Lublin 2009

Acceptance Unit Manager or authorized person