**Kharkiv National Medical University**

**Department of Fundamentals of Internal Medicine N1, Fundamentals of Bioethics and Biosafety**

**PrintEducational program for training specialists of the second (master's)**

**level of higher education 22 "Health care"**

**in specialty 222 "Medicine"**

**SYLLABUS OF THE COURSE**

**Fundamentals of hematology**

|  |  |  |
| --- | --- | --- |
| The syllabus of the discipline was approved at  the meeting of the Department of Fundamentals of Internal Medicine N1, Fundamentals of Bioethics and Biosafety  Protocol from “27” August 2020 № 15  Head of the Department  \_\_\_\_\_\_\_\_\_\_\_\_\_\_ professor Ashcheulova T.V  (signature) (surname and initials)    “ 27 ” August 2020 |  | Approved by the methodical commission on  problems general and pre-professional  training of KhNMU  Protocol from “ 31 ” August 2020 № 1  Head  \_\_\_\_\_\_\_\_\_\_\_ professor Kravchun P.H.  (signature) (surname and initials)    “ 31 ” August 2020 |

**Kharkiv 2020**

Developers:

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Gerasimchuk Nina Nikolaevna, teacher of the discipline ‘Fundamentals of hematology”

**Information about teachers:**

|  |  |  |
| --- | --- | --- |
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**Contact phone and E-mail of the department:** tel. (057) 725-07-58, pim1bioethics@gmail.com

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

**Online consultations:** system, Moodle system ZOOM schedule and venue by prior arrangement with the teacher.

**Location:** Gagarin Avenue 137; Propedeutics of Internal Medicine No 1, Basis of Bioethics and Biosafety, Lecture room – on the 1-rd floor

Rooms for practical classes are located on the 1-th floor, rooms 2, 3, 5.

**Discipline information**

|  |  |  |  |
| --- | --- | --- | --- |
| Name of indicators | Area of knowledge, direction of training, educational qualification level | Characteristic of the discipline | |
| full-time education | |
| Number of credits – 3 | Training direction:  22 Health Care  (code and name) | Normative | |
| The total number of  hours - 90 | Specialty:  222 «Medicine»  (code and name) | **Year of the education:** | |
| 5-th | |
| **Semester** | |
| 10-th | |
| **Lectures** | |
| Hours for full-time study:  classroom - 20 hours  independent student work  - 70 hours | Education level:  Second (Master's level) | 0 hours | |
| **Practical classes** | |
| 20 hours. | - |
| **laboratory work -** 0 hours | |
| **Independent work -** | |
| 70 hours. | |
| **Individual lessons:**  - 0 hours. | |
| **Type of control:**  Current control  Credit | |

The educational program of higher education in Ukraine, the second (master's) level,

educational qualification, assigned - the technical branch of knowledge - 22 Healthcare, specialty 222 "Medicine" is compiled on the basis of the Law of Ukraine "On Higher Education" and the

Resolution of the Cabinet of Ministers of Ukraine dated 01.02.2017 No. 53 "On Amendments to

the Resolution of the Cabinet of Ministers of Ukraine dated 04.29.2015 No. 266", according to

the order of the Ministry of Education and Science of Ukraine dated 01.06.2016. No. 600 "On

Approval and Implementation of Methodological Recommendations for the Development of

Standards higher education ".

The course program defines the prerequisites for access to training, orientation and the main focus of the program, the amount of ECTS credits required to obtain an educational

master's degree, a list of general and special (professional) competencies, the normative and variable content of specialist 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, persons with special needs, any religion, sexual orientation, gender identity, veteran status

or marital status for all rights, privileges, programs and activities provided to university students.

Discipline page in the Moodle system

http://31.128.79.157:8083/course/view.php?id=764

**Description of the discipline.**

The program for studying the discipline " Fundamentals of hematology " is intended for higher educational institutions of the Ministry of Health of Ukraine in accordance with the requirements of the credit-transfer system for organizing the educational process ECTS, based on a combination of learning technologies by sections and credit assessment credits - units of measuring the student's workload required for mastering the discipline or its section.

**Interdisciplinary connections:**

Studying the discipline " Fundamentals of hematology " is carried out in the Х or Х I semesters of the 5 th year of study and is based on knowledge of the basic natural science disciplines: medical biology, medical and biological physics, medical, biological and bioorganic chemistry, human anatomy, histology, cytology and embryology with peculiarities of childhood, Latin language, history of medicine, foreign language with a professional orientation, philosophy and integrates with these disciplines. Creates the basis for the further study of clinical and hygienic disciplines. Lays the foundations for the formation of knowledge, abilities and skills, which are determined by the final goals of the program, necessary in the next professional activity.

The program of the academic discipline Bases of hematology consists of three section.

**The purpose and objectives of the discipline**

**The purpose** of teaching the discipline " Fundamentals of hematology" is the formation of the student's basics of clinical thinking and the acquisition of professional competencies of examination of the patient and assessment of the main manifestations of respiratory diseases in compliance with the principles of medical ethics and deontology.

**The main tasks of studying** the discipline " Fundamentals of hematology" are:

-mastering by the student the theoretical knowledge necessary for detection of blood diseases;

- mastering the practical techniques and methods of physical and laboratory-instrumental examination of patients;

- assimilation of general methodological approaches to clinical examination of the patient;

- diagnosis of certain diseases of human blood with their typical manifestations;

- formation of students' moral, ethical and deontological qualities in professional communication with the patient.

**Competences and learning outcomes**, the formation of which is facilitated by disciplines. According to the requirements of the standard, the discipline provides students with the acquisition of competencies:

**1.Integral:** the ability to solve typical and complex specialized tasks and practical problems in professional health care activities, or in the process of training, involves research and / or innovation and is characterized by the complexity and uncertainty of conditions and requirements

**2.Common:**

1.Ability to abstract thinking, analysis and synthesis.

2. Ability to learn and master modern knowledge.

3. Ability to apply knowledge in practical situations.

4. Knowledge and understanding of the subject area and understanding of professional activity.

5. Ability to adapt and act in a new situation.

6. Ability to make informed decisions.

7. Ability to work in a team.

8. Interpersonal skills.

9. Ability to communicate in the state language both orally and in writing.

10. Ability to communicate in a foreign language

11. Skills in the use of information and communication technologies.

12. Definiteness and persistence on the set tasks and the assumed duties.

13. Ability to act socially responsibly and consciously.

14. Striving to preserve the environment.

15. Ability to act on the basis of ethical considerations (motives).

**3.Special (professional, subject):**

1. Skills of interviewing and clinical examination of the patient.

2. Ability to determine the required list of laboratory and instrumental studies and assess their results.

3. The ability to establish a syndromic diagnosis of the disease.

4. Ability to diagnose emergency conditions.

5. Skills in providing emergency medical care.

6. Skills of performing medical procedures.

7. Ability to maintain medical records.

8. Ability to carry out sanitary and hygienic and preventive measures.

9. The ability to ensure the necessary regime of the patient's stay in the hospital in the treatment of diseases.

**Detailing of competencies according to NQF descriptors in the form of**

**"Competence Matrix"**

| **№** | **Classification of**  **competencies by**  **NRC** | | **Knowledge** | **Skills** | | **Communication** | | **Autonomy and**  **responsibility** | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Integral competence** | | | | | | | | | |
| 1. | Ability to solve typical and complex specialized tasks and practical problems in professional activities in the field of health care, or in the learning process, which involves research and / or innovation and is  characterized by complexity and uncertainty of conditions and requirements. | | | | | | | | |
| **General competencies** | | | | | | | | | |
|  | Ability to abstract thinking, analysis and synthesis. | | Know the methods of analysis, synthesis and further modern learning | Be able to analyze information, make informed decisions, be able to acquire modern knowledge | | Establish appropriate connections to achieve goals. | | Be responsible for the timely acquisition of modern knowledge. | |
|  | Ability to learn and master modern knowledge. | | Know the current trends in the industry and analyze them | Be able to analyze professional information, make informed decisions, acquire modern knowledge | | Establish appropriate connections to achieve goals. | | Be responsible for the timely acquisition of modern knowledge. | |
|  | Ability to apply knowledge in practical situations. | | Have specialized conceptual knowledge,  acquired in the learning process. | Be able to solve complex problems and problems that arise in professional activities. | | Clear and unambiguous communication of own conclusions, knowledge and explanations which substantiate, to experts and non-specialists. | | Responsible for making decisions in difficult conditions | |
|  | Knowledge and understanding of the subject area and understanding of professional activity | | Have deep knowledge of the structure of professional activity. | Be able to carry out professional activities that require updating and integration of knowledge. | | Ability to effectively form a communication strategy in professional activities | | To be responsible for professional development, ability to further professional training with a high level of autonomy. | |
|  | Ability to adapt and act in a new situation. | | Know the types and methods of adaptation principles of the new situation | To be able to apply means of self-regulation, to be able | | Establish appropriate connections to achieve results. | | Be responsible for the timely use of self-regulatory methods. | |
|  | Ability to make an informed decision | | Know the tactics and strategies of communication, laws and ways of communicative behavior | Be able to make informed decisions, choose ways and strategies to communicate to ensure effective teamwork | | Know the tactics and strategies of communication, laws and ways of communicative behavior | | Be responsible for the choice and tactics of the communication method | |
|  | Ability to work in a team | | Know the tactics and strategies of communication, laws and ways of communicative behavior. | Know the tactics and strategies of communication, laws and ways of communicative behavior. | | Use communication strategies | | Be responsible for the choice and tactics of communication | |
|  | Interpersonal skills | | Know the laws and methods of interpersonal interaction | Be able to choose ways and strategies of communication for interpersonal interaction | | Use interpersonal skills | | Carry-ness responsibility for the choice of tactics and methods of communication | |
|  | Ability to communicate in the state language both orally and in writing. | | Have a perfect knowledge of the state language | Be able to apply knowledge of the state language, both orally and in writing | | Use the state language in professional and business communication and in the preparation of documents. | | To be responsible for fluency in the state language, for the development of professional knowledge. | |
|  | Ability to communicate in a foreign language | | Have a basic knowledge of a foreign language | Be able to communicate in a foreign language. | | Use a foreign language in professional activities | | Be responsible for the development of professional knowledge using a foreign language. | |
|  | Information and communication technology skills | | To have deep knowledge in the field of information and communication technologies used in professional activities | To be able to use information and communication technologies in the professional field, which requires updating and integration of knowledge | | Use information and communication technologies in professional activities. | | Be responsible for the development of professional knowledge and skills. | |
|  | Determination and persistence in the tasks and responsibilities | | Know the responsibilities and ways to perform the tasks | Be able to set goals and objectives to be persistent and conscientious in the performance of duties | | Establish interpersonal relationships to effectively perform tasks and responsibilities | | Responsible for the quality of the tasks | |
|  | The ability to act socially responsibly and consciously | | Know your social and civil rights and responsibilities | To form one's civic consciousness, to be able to act in accordance with it | | Ability to convey one's public and social position | | Be responsible for your civic position and activities | |
|  | The desire to preserve the environment. | | Know the problems of environmental protection and ways to preserve it | Be able to form requirements for themselves and others to preserve the environment | | Make proposals to the relevant authorities and institutions on measures to preserve and protect the environment | | Be responsible for the implementation of environmental protection measures within its competence. | |
|  | Ability to act on ethical considerations | | Know the basics of ethics and deontology in  hematology | Be able to apply ethical and deontological norms and principles in the professional activity of a hematologist | | Ability to convey to patients, their families, colleagues their professional position | | Be responsible for the implementation of ethical and deontological norms and principles in the professional activities of a hematologist | |
| **Special (professional) competencies** | | | | | | | | | |
| 1. 1. | Skills of interviewing and clinical examination of a patient with blood diseases | Have specialized knowledge about the person, blood and hematopoietic organs, know the standard schemes of questioning and physical examination of the patient. | | | Be able to conduct a conversation with the patient, his examination, palpation, percussion, auscultation of the lungs and heart because of algorithms and standards. | | Effectively form a communication strategy when communicating with the patient.  Enter information about the state of human health in the relevant medical records | | Be responsible for the quality collection of information obtained on the basis of interviews, surveys, surveys and for timely assessment of the general health of the patient |
| 1. 2. | Ability to determine the required list of laboratory and instrumental studies and evaluate their results | Have specialized knowledge about the person, blood system and hematopoietic organs, standard methods of laboratory and instrumental research defined by the program. | | | Be able to analyze the results of laboratory and instrumental studies and on their basis to assess information about the condition of a patient with hematology diseases | | To form and communicate to the patient and specialists the conclusions on the necessary list of laboratory and instrumental researches. | | Be responsible for deciding on the evaluation of laboratory and instrumental research results |
| 1. 3. | Ability to establish a syndromic diagnosis of the disease | Have specialized knowledge about a person, his blood system and hematopoietic organs; standard methods of examination; algorithms for diagnosing blood diseases; algorithms for the selection of leading symptoms and syndromes; methods of laboratory and instrumental examination; knowledge of human condition assessment. | | | Be able to conduct a physical examination of the patient; be able to make an informed decision about the selection of the leading clinical symptom or syndrome; be able; to appoint  laboratory and instrumental examination of the patient by applying standard methods | | On the basis of regulatory documents to conduct medical  patient documentation (inpatient card, etc.). | | Adhering to ethical and legal norms, be responsible for making informed decisions and actions regarding the correctness of the established syndrome diagnosis of the disease |
| 1. 4. | Ability to diagnose emergencies | Have specialized knowledge about the person, blood system and hematopoietic organs, standard methods of examination of a person with hematology disease | | | Be able, in the absence of information, using standard techniques, by making an informed decision to assess the human condition and the need for emergency care | | Under any circumstances, in accordance with the relevant ethical and legal norms, make an informed decision to assess the human condition and organize the necessary medical measures depending on the human condition | | Be responsible for the timeliness and effectiveness of medical measures to diagnose emergencies |
| 1. 5. | Emergency care skills | Have specialized knowledge about the structure of the human body, its organs and systems, especially the blood system and hematopoietic organs, the algorithm of emergency medical care in emergencies (cardiac arrest and respiration) | | | Be able to provide emergency medical care in an emergency - to perform indirect heart massage and artificial respiration | | Explain the need and procedure for emergency medical care | | Be responsible for the timeliness and quality of emergency medical care |
| 1. 6. | Skills to perform medical manipulations | Have specialized knowledge about the person, his organs and systems, namely the blood system and hematopoietic organs, knowledge of algorithms for performing medical manipulations provided by the program. | | | Be able to perform medical manipulations provided by the program | | It is reasonable to form and bring to the patient, specialists conclusions about the need for medical manipulations | | Be responsible for the quality of medical manipulations |
| 1. 7. | Ability to keep medical records | Know the system of official document management in the professional work of medical staff, including modern computer information technology | | | Be able to determine the source and location of the desired  information depending on its type; be able to process information and analyze the information obtained | | Obtain the necessary information from a specific source and on the basis of its analysis to form appropriate conclusions | | Be responsible for the completeness and quality of the analysis of information and conclusions based on its analysis. |
| 1. 8. | Ability to carry out sanitary and hygienic and preventive measures | Know the system of sanitary and preventive measures in a medical hospital.  Know the principles of nutrition, principles and methods of promoting a healthy lifestyle | | | Have skills in organizing the sanitary-hygienic and medical-protective regimes of the hematology department of the hospital. Be able to organize the promotion of a healthy lifestyle. | | Know the principles of providing information on the sanitary and hygienic condition of the premises and compliance with general hospital and medical protection regimes to the management of the hematology department of the medical institution; use lectures and interviews. | | To be responsible for timely and high-quality measures to ensure the sanitary and hygienic and medical protection regimes of the hematology department of the hospital,  promoting a healthy lifestyle. |
| 1. 9. | Ability to provide the necessary mode of stay in the hospital of the hematology department in the treatment of  diseases  blood systems and hematopoietic organs | Have specialized knowledge about man, his organs and systems; especially diseases  blood systems and hematopoietic organs, ethical norms; algorithms to ensure the mode of stay in  hematology department of the hospital during treatment | | | Be able to provide the doctor-defined mode of work and rest in the treatment of the disease | | Communicate to the patient and specialists the conclusions about what is necessary  mode of stay in the hematology department of the hospital, modes of work and rest in the treatment of the disease | | Be responsible for ensuring compliance with the prescribed regime of work and rest in the treatment of the disease |

**Learning outcomes:**

According to the training program for the academic discipline “Fundamentals of hematology", an applicant for higher education must

**Know:**

- the most important etiological and pathogenetic factors in the formation of pathological processes in the human body;

- methodical bases of clinical examination of the patient, schemes of research of the patient and writing of the history of illness;

- methodical bases of physical examination of the patient - interrogation, inspection, palpation, percussion, auscultation

- the most important symptoms and syndromes in the clinic of diseases of the blood and blood-forming organs, and their semiological interpretation;

- clinical and diagnostic interpretation of indicators of the most important laboratory and instrumental studies;

- medical Greek-Latin terminology in determining the main manifestations of diseases and in use in professional vocabulary.

**Be able to apply the acquired knowledge in practical situations:**

1. Demonstrate mastery of moral and deontological principles of a medical specialist and the principles of professional subordination in the clinic of internal medicine, namely in the clinic of hematology.

2. Conduct surveys and physical examinations of patients and analyze their results in the clinic of internal medicine, namely in patients with hematological profile.

3. To make the plan of inspection of the patient at a typical course of the most widespread therapeutic diseases.

4. Analyze the results of basic laboratory and instrumental research methods.

5. Identify the leading symptoms and syndromes in the clinic of blood diseases.

6. Demonstrate the ability to methodically correctly present the results of the patient's examination in the form of a medical history with a justification for the syndrome diagnosis.

7. Use Greek-Latin medical terms in the practice of a specialist.

8. Demonstrate mastery of skills in organizing the mode of stay of patients in hematology departments.

9. Demonstrate first aid skills for patients with disorders of the respiratory, cardiovascular and hepatobiliary systems

**The content of the discipline**

The study of the discipline " Fundamentals of hematology" is given 90 hours - 3.0 ECTS credits, 20 hours of which is classroom training (in the form of practical classes) and 70 hours - independent work of students.

**The program of discipline**

**Discipline section 1.**

**The doctrine of hematopoiesis. Composition and functions of blood. Clinical blood analysis.**

**Topic 1. Embryonic and postembryonic hematopoiesis. Hematopoiesis scheme. Leukocytopoiesis.**

The morphology of leukocytes. Cells of granular, monocytic, lymphocytic and plasmacytic series. Functions of leukocytes. Quantitative changes in leukocytes: leukocytosis and leukopenia. Quantitative changes in leukocyte types. Age-related changes in blood composition. Neutrophilic shift of the leukogram. Degenerative changes and abnormalities of leukocytes.

**Topic 2. Erythrocytopoiesis, erythrocyte morphology. Thrombocytopoiesis, morphology and function of platelets.**

Erythrocytopoiesis, morphology of erythrocytes. Pathological erythrocytopoiesis. Functions of erythrocytes. Quantitative changes in erythrocytes. Erythrocytosis. Degenerative changes of erythrocytes. Erythrocyte staining. Elements of pathological regeneration.

Thrombocytopoiesis, morphology and functions of platelets. Investigation of vascular-platelet hemostasis. Determination of platelet count. Blood sampling for platelets. Production, fixation and staining of blood smears and platelet counting by Fonio, on automatic meters, phase contrast microscope. Study of the morphology of cells of the megakaryocyte series and the size of platelets in smears (thrombocytogram). Determination of clotting time of capillary blood according to Sukharev and venous according to Lee-White. Determination of the duration of bleeding by Duke. Diagnostic value of indicators.

**Topic 3. Clinical interpretation of the clinical blood analysis. Bone smear examination.**

Clinical interpretation of the clinical blood analysis. Bone smear examination. Structures and function of the bone marrow. Obtaining material and preparation of drugs for microscopic examination. Myelogram count, bone marrow indices and their evaluation.

**Discipline section 2.**

**Anemia, classification, etiology. Pathogenesis. Clinical manifestations. Laboratory indicators. Diagnosis.**

**Topic 4. Acute posthemorrhagic anemia. Aplastic anemia (hereditary and acquired).**

Anemia associated with blood loss - posthemorrhagic anemia. Anemia associated with inhibition of bone marrow cell proliferation. Etiology. Pathogenesis. Clinical manifestations. Laboratory indicators. Diagnosis.

**Topic 5. Iron deficiency anemia. Sideroblastic anemia. Differential diagnosis of iron deficiency and sideroblastic anemia.**

Anemia associated with hematopoietic disorders. Anemia associated with impaired hemoglobin formation: iron deficiency; with impaired synthesis or utilization of porphyrins - hereditary and acquired; anemias are associated with impaired globin synthesis - thalassemia, hemoglobinopathy. Etiology, pathogenesis. Clinical manifestations. Laboratory indicators. Differential diagnosis.

**Topic 6. B12-deficiency anemia. Folate deficiency anemia.**

Metabolism and role of vitamin B12 in the body. Anemia associated with impaired synthesis of deoxyribonucleic acid (DNA) and ribonucleic acid (RNA) (megaloblastic). Etiology, pathogenesis. Clinical manifestations. Laboratory indicators. Diagnosis.

**Topic 7. Hemolytic anemia.**

Anemia associated with increased hemorrhage - hemolytic anemia. Laboratory signs of hemolysis. Classification of hemolytic anemias. Hereditary hemolytic anemias. Acquired hemolytic anemia. Hereditary microspherocytosis

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Curation of patients. Intermediate control of knowledge - the final control.

**Discipline section 3.**

**Leukemias, classification, etiology, pathogenesis. Clinical manifestations.**

**Laboratory indicators. Diagnosis.**

**Topic 8. Acute leukemia.**

Stages of acute leukemia. Forms of acute leukemia: myeloblastic, myelomonoblastic, promyelocytic, monoblastic, erythromyelosis, megakaryoblastic, macrophage, low-percentage, lymphoblastic, plasmablastic, undifferentiated.

Characteristic. Laboratory indicators. Differential diagnosis. The value of cytochemical research methods.

**Topic 9. Chronic leukemia. Chronic myelogenous leukemia.**

Clinical manifestations. Laboratory indicators. Diagnosis.

**Topic 10. Lymphoproliferative diseases. Chronic lymphocytic leukemia.**

Clinical manifestations. Laboratory indicators. Diagnosis.

**Topic 11. Paraproteinemic hemoblastosis. Multiple myeloma (plasmacytoma, myeloma). Lymphogranulomatosis.**

Paraproteinemic hemoblastosis. Characteristics of immunoglobulins. Myeloma, forms. Waldenstrom's disease. Heavy chain disease. Clinical manifestations. Laboratory indicators. Diagnosis. Lymphogranulomatosis (Hodgkin's disease), stages, histological variants. Clinical manifestations. Laboratory indicators. Differential diagnosis.

**Credit.**

**The content of the discipline**

Curriculum of the discipline

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Тopic names** | **Number of hours** | | | | | |
| **Full-time education** | | | | | |
| **Total** | **Including** | | | | |
| **lec** | **pract** | **lab** | **indiv** | **ind** |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** |
| **Discipline section 1. The doctrine of hematopoiesis. Composition and functions of blood. Clinical blood analysis** | | | | | | |
| Topic 1. Embryonic and postembryonic hematopoiesis. Hematopoiesis scheme. Leukocytopoiesis | 8 | - | 2 | - | - | 6 |
| Topic 2. Erythrocytopoiesis, erythrocyte morphology. Thrombocytopoiesis, morphology and function of platelets. | 8 | - | 2 | - | -- | 6 |
| Topic 3. Clinical interpretation of the clinical blood analysis. Bone smear examination. | 8 | - | 2 | - | - | 6 |
| **Discipline section 2.**  **Anemia, classification, etiology. Pathogenesis. Clinical manifestations. Laboratory indicators. Diagnosis.** | | | | | | |
| Topic 4. Acute posthemorrhagic anemia. Aplastic anemia (hereditary and acquired). | 8 | - | 2 | - | - | 6 |
| Topic 5. Iron deficiency anemia. Sideroblastic anemia. Differential diagnosis of iron deficiency and sideroblastic anemia. | 8 | - | 2 | - | - | 6 |
| Topic 6. B12-deficiency anemia. Folate deficiency anemia. | 8 | - | 2 | - | - | 6 |
| Topic 7. Hemolytic anemia.  Curation of patients. Intermediate control of knowledge - the final control. | 7 | - | 2 | - | - | 5 |
| **Discipline section 3.**  **Leukemias, classification, etiology. pathogenesis. Clinical manifestations.**  **Laboratory indicators. Diagnosis.** | | | | | | |
| Topic 8. Acute leukemia. | 7 | - | 1 | - | - | 6 |
| Topic 9. Chronic leukemia. Chronic myelogenous leukemia. | 7 | - | 1 | - | - | 6 |
| Topic 10. Lymphoproliferative diseases. Chronic lymphocytic leukemia. | 7 | - | 1 | - | - | 6 |
| Topic 11. Paraproteinemic hemoblastosis. Multiple myeloma (plasmacytoma, myeloma). Lymphogranulomatosis. | 7 | - | 1 | - | - | 6 |
| **Credit** | **7** | **-** | **2** | **-** | **-** | **6** |
| **Total hours by discipline** | **90** | **-** | **20** |  |  | **70** |

**Practical classes**

|  |  |  |
| --- | --- | --- |
| № з/п | **Names of the topics** | **Number of**  **hours** |
| 1. | Topic 1. Embryonic and postembryonic hematopoiesis. Hematopoiesis scheme. Leukocytopoiesis | 2 |
| 2. | Topic 2. Erythrocytopoiesis, erythrocyte morphology. Thrombocytopoiesis, morphology and function of platelets. | 2 |
| 3. | Topic 3. Clinical interpretation of the clinical blood analysis. Bone smear examination. | 2 |
| 4. | Topic 4. Acute posthemorrhagic anemia. Aplastic anemia (hereditary and acquired). | 2 |
| 5. | Topic 5. Iron deficiency anemia. Sideroblastic anemia. Differential diagnosis of iron deficiency and sideroblastic anemia. | 2 |
| 6. | Topic 6. B12-deficiency anemia. Folate deficiency anemia. | 2 |
| 7. | Topic 7. Hemolytic anemia.  Curation of patients. Intermediate control of knowledge - the final control. | 2 |
| 8. | Topic 8. Acute leukemia. | 1 |
| 9. | Topic 9. Chronic leukemia. Chronic myelogenous leukemia. | 1 |
| 10. | Topic 10. Lymphoproliferative diseases. Chronic lymphocytic leukemia. | 1 |
| 11. | Topic 11. Paraproteinemic hemoblastosis. Multiple myeloma (plasmacytoma, myeloma). Lymphogranulomatosis. | 1 |
| 12. | Credit, incl.  test control of theoretical training  control of practical skills  analysis of the results of instrumental research | 2 |
| 13. | **TOTAL HOURS** | **20** |

**Independent work**

|  |  |  |
| --- | --- | --- |
| **№ з/п** | **Names of the topics** | **Number of**  **hours** |
| 1 | Topic 1. Embryonic and postembryonic hematopoiesis. Hematopoiesis scheme. Leukocytopoiesis | 6 |
| 2 | Topic 2. Erythrocytopoiesis, erythrocyte morphology. Thrombocytopoiesis, morphology and function of platelets. | 6 |
| 3 | Topic 3. Clinical interpretation of the clinical blood analysis. Bone smear examination. | 6 |
| 4 | Topic 4. Acute posthemorrhagic anemia. Aplastic anemia (hereditary and acquired). | 6 |
| 5 | Topic 5. Iron deficiency anemia. Sideroblastic anemia. Differential diagnosis of iron deficiency and sideroblastic anemia. | 6 |
| 6 | Topic 6. B12-deficiency anemia. Folate deficiency anemia. | 6 |
| 7 | Topic 7. Hemolytic anemia.  Curation of patients. Intermediate control of knowledge - the final control. | 5 |
| 8 | Topic 8. Acute leukemia. | 6 |
| 9 | Topic 9. Chronic leukemia. Chronic myelogenous leukemia. | 6 |
| 10 | Topic 10. Lymphoproliferative diseases. Chronic lymphocytic leukemia. | 6 |
| 11 | Topic 11. Paraproteinemic hemoblastosis. Multiple myeloma (plasmacytoma, myeloma). Lymphogranulomatosis. | 6 |
| 12 | Preparation for the credit | 5 |
| **разом** | | **70** |

**Recommended Books**

**Basic**

1. O.M.. Koval'ova., N.A.Safargalina-Kornilova. Propedevtyka vnutrishn'oi' medycyny. Pidruchnyk z gryfom MON, MOZ.– K.: VSV «Medycyna».. – 2012. 720 s (in Ukrainian).

2. O.N. Kovaleva., N.A.Safargalina-Kornilova. Propedevtika vnutrennej mediciny. Uchebnik s grifom MON, MZ .– K.: VSI «Medicina». – 2013. 752 s (in Russion).

3. O.N. Kovaleva, N.A. Safargalina-Kornilova. Diagnostika zabolevanij sistemy krovi. Uchebnoe posobie. HGMU, 1999. 162s (in Russion).

4. Dzjak G.V., Netjazhenko V.Z., Homazjuk T.A. ta in. Osnovy obstezhennja hvorogo ta shema istorii' hvoroby (dovidnyk). – Dn-sk, Art-pres, 2002 (in Ukrainian).

**Auxiliary:**

1. Baza testiv. Krok 2. Hvoroby krovi ta krovotvorenyh organiv (gematologija) : metod. vkaz. dlja studentiv 3–6-h kursiv med. fak-tiv vyshhyh med. navch. zakladiv III–IV rivniv akredytacii' / uporjad. T. V. Ashheulova, O. M. Koval'ova, N. A. Safargalina-Kornilova, N.M. Gerasymchuk. – Harkiv : HNMU, 2016 – 16 s (in Ukrainian).

2. Praktykum z propedevtyky vnutrishn'oi' medycyny. Chastyna 2. «Symptomy ta syndromy zahvorjuvan' vnutrishnih organiv». T.V.Ashheulova, G.V.Demydenko, N.M.Gerasymchuk, O.A.Kochubej, G.V.Kozhem’jaka, V.A.Nikolajeva. - Harkiv, HNMU, 2018. - 57s (in Ukrainian).

3. «Shema istorii' hvoroby» v kursi propedevtyky vnutrishn'oi' medycyny. Metodychni vkazivky dlja studentiv III kursu – medychnyh fakul'tetiv. T.V.Ashheulova, N.M.Gerasymchuk .- Harkiv: HNMU, 2019 – 14s (in Ukrainian).

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**Information resources:**

1. http://www.knmu.kharkov.ua/index.php?option=com\_content&view=frontpage&Itemid=1&lang=uk
2. http://repo.knmu.edu.ua/
3. http://knmu.kharkov.ua/index.php?option=com\_content&view=article&id=498&Itemid=42&lang=uk
4. http://www.moz.gov.ua/ua/portal/
5. http://www.mon.gov.ua/

**Individual tasks.**

Individual tasks include: review of scientific literature, preparation of abstracts, conducting research and individual teaching and research tasks, writing abstracts of research and presentations at conferences.

**Discipline policy and values**

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 can discuss different tasks, but their performance is strictly individual. It is not

allowed to write off, use various software, tips, use a mobile phone, tablet or other electronic

gadgets during classes for purposes other than the educational process. Students are not allowed

to be late for practical classes.

Students with special needs 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 head of the group. If you have any questions, please contact the teacher.

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

All students of KhNMU are protected by the Regulations on Prevention, Prevention and

Settlement of Cases Related to Sexual Harassment and Discrimination at Kharkiv National

Medical University, designed to define an effective mechanism for resolving conflict situations

related to discrimination and sexual harassment. This 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 Article 4, paragraph 1, 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 Committee on Economic, Social and Cultural Rights); in the spirit of international mutual 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 for Equal Rights and Opportunities for Women and Men until 2021. Kharkiv National Medical University provides education and work that is free from discrimination, sexual harassment, intimidation or exploitation. The University recognizes the importance of confidentiality. All persons responsible for the implementation of this policy (staff of deans, faculties, institutes and the Center for Gender Education, members of the student government and ethics committee, vice-rector for research and teaching) are confidential about 17 those who report or accuse of discrimination. or sexual harassment (except where 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.

**Behavior in the audience**

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.

1. The student is obliged to come to practical classes or lectures at the time set by the educational part of the university.

2. During the study period, the student must be in the classroom or lecture hall and leave these rooms only with the permission of the teacher or lecturer.

3. The student is obliged to take care of material values, visual aids and immediately inform the teacher about their damage.

4. At the beginning of the practical lesson, the monitor of the group appoints a duty who monitors compliance with the above rules, and at the end of the lesson brings order to the classroom.

During classes it is allowed:

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

- take pictures of presentation slides;

- actively participate in the lesson.

It is strictly forbidden in the classroom:

- be in outerwear;

- attendance without a medical coat;

- eat food (except for persons whose special health condition requires otherwise - in this case, medical confirmation is required);

- smoke, use alcoholic and even low-alcohol drinks or drugs;

- use foul language or words that offend the honor and dignity of colleagues and teachers;

- play gambling;

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

- make noise, shout or listen to loud music in classrooms and even corridors during class.

**Plagiarism and academic integrity**

The Department of Disaster medicine and military medicine maintains zero tolerance for plagiarism. Male and female students are expected to constantly raise their awareness of academic writing. The first lessons will provide information on what to consider plagiarism and how to properly conduct research and scientific research.

**Occupational Safety and Health**

The first lesson of the course will explain the basic principles of labor protection by conducting appropriate training. It is expected that everyone should know where the nearest evacuation exit is, where the fire extinguisher is, how to use it, and so on.

**Procedure for informing about changes in the syllabus: t**he necessary changes in the syllabus are approved by the methodical commission of KhNMU on the problems of natural science training and are published on the site of KhNMU, the site of Department of Fundamentals of Internal Medicine N1, Fundamentals of Bioethics and Biosafety, of KhNM.

**Evaluation policy**

The form of control and assessment system is carried out in accordance with the requirements of the discipline program and "Instructions on the system of assessment of students under the European Credit Transfer System".

Methods and means of standardized assessment of current educational activities

To receive credit for the course " Fundamentals of hematology" it is necessary to attend all practical classes, have the necessary level of knowledge on the topics of classes, the number of points received by the student per course depends on the level of knowledge, the degree of mastery of practical skills.

**Forms of control:**

- Current - current educational activities – marks for topics.

- Final – final test – credit.

**Current control** is carried out during the study of a specific topic to determine the level

of formation of a particular skill or ability, the quality of learning a certain portion of educational material by observing the educational and cognitive activities of students in class, oral interviews, written control of knowledge and skills through written works, questions, essays, solving situational clinical problems), discussions, role-playing games on the topic of the lesson and test control using a set of standardized tasks.

**Criteria for assessing the current educational activities of the student.**

At each practical lesson, the teacher assesses the knowledge of each student on a four-point scale.

**Excellent (“5”)** - The student correctly, clearly, logically and fully answers all the questions of the current topic, knows the material of previous topics (ascending level of knowledge), answers the questions of the lecture course and questions on independent work.

**Good (“4”)** - The student correctly, sometimes with the help of explanatory questions, answers the questions of the current topic, knows the material of previous topics (ascending level of knowledge), answers the questions of the lecture course and questions on independent work.

**Satisfactory (“3”)** - The student incompletely, with the help of explanatory questions, answers the questions of the current topic, questions from the material of previous topics (ascending level of knowledge), inaccurately and incompletely answers the questions of the lecture course and questions from independent work. Cannot build a clear, logical answer on their own.

**Unsatisfactory (“2”)** -The student does not know the material of the current topic. Or answers the questions of the current topic insufficiently, incompletely, can not build a logical answer, does not answer explanatory questions, does not understand the content of the material, does not know questions from the material of previous topics (ascending level of knowledge), does not answer lecture course questions and questions independent work.

**Final control** involves summarizing the results of current control.

The form of final control of knowledge is a test. The final control of mastering the discipline is carried out upon its completion at the final lesson. The final score for current activities is defined as the sum of points or the arithmetic mean of traditional estimates obtained for current activities. The traditional arithmetic mean score is converted into points according to the conversion scale and the final score according to the traditional scale.

The recalculation of the average assessment of current activities into a multi-point scale

is carried out in accordance with the "Instructions for the assessment of educational activities

under the European credit transfer system of organizing the educational process."

**Recalculation of the average score for current activities in a multi-point scale**

**(for disciplines ending with a credit)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 4-point  scale | 200-point  scale |  | 4-point  scale | 200-point  scale |  | 4-point  scale | 200-point  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 | **less 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 |  |  |

**Correspondence of discipline assessment in points**

**assessment in ECTS and traditional assessment**

|  |  |  |
| --- | --- | --- |
| **Assessment of discipline**  **in points** | **Assessment on the ECTS**  **scale** | **Traditional assessment**  **from the discipline** |
| 180–200 | A | 5 |
| 160–179 | B | 4 |
| 150–159 | C | 4 |
| 130–149 | D | 3 |
| 120–129 | E | 3 |
| Less 120 | F, FX | 2 |

**Elimination of academic debt** (working off). Carried out in accordance with the REGULATION on the procedure for students of the Kharkiv National Medical University to study classes order of KhNMU from \_06.11.2019 № 453

<http://www.knmu.kharkov.ua/index.php?searchword=%D0%B2%D1%96%D0%B4%D0%BF%D1%80%D0%B0%D1%86%D1%8E%D0%B2%D0%B0%D0%BD%D0%BD%D1%8F&ordering=&searchphrase=all&Itemid=1&option=com_search&lang=uk>

**Tasks for independent work**

The basic list of types of independent work of students, developed in accordance with the structure of the discipline, is presented in "Independent work". Mandatory type of independent work of students is the supervision of patients and writing a detailed history of the disease, which is provided in the study of "Symptoms and syndromes in diseases blood system and hematopoietic organs". The tasks for independent work are:

1. Observation of a patient (questioning, physical examination, evaluation of instrumental and laboratory tests) with pathology of the hematology system with writing a fragment of medical history and presentation of a clinical case in practice

2.The student independently chooses the disease for which he will conduct curation (questioning, examination) of the patient.

The rules for appealing the assessment ar carried out in accordance with applicable regulations.