



UNIwersytet  
Andrzeja Frycza Modrzewskiego  
w Krakowie

## Collegium Medicum Faculty of Medicine

### SUBJECT CARD

Field of studies: **Medicine**

Form of studies: **Full-time course**

Degree: **long-cycle Master's program**

Specializations: **No specialization**

Academic year: **2024/2025**

HEMATOLOGY	
<b>SUBJECT NAME</b>	Hematology
<b>NUMBER OF ECTS POINTS:</b>	3
<b>LANGUAGE OF INSTRUCTION</b>	English
<b>TEACHER(S)</b>	Prof. Sebastian Giebel, MD,PhD, Prof. Jerzy Hołowiecki,MD,PhD Assoc. Prof. Tomasz Czerw MD,PhD, Assoc. Professor Małgorzata Krawczyk-Kuliś, MD, PhD, Assoc. Professor Grażyna Kamińska Winciorek MD, PhD, Monika Dzierżak-Mietła, MD, PhD, Andrzej Frankiewicz, MD, PhD Włodzimierz Mendrek, MD, PhD, Maria Saduś-Wojciechowska, MD, PhD, Ryszard Swoboda, MD, Agnieszka Janikowska, MD, Małgorzata Ociepa-Wasilkowska, MD, Małgorzata Sobczyk-Kruszelnicka, MD, PhD, Maja Twardosz, MD, Agnieszka Barchnicka,
<b>PERSON RESPONSIBLE</b>	Assoc. Professor Małgorzata Krawczyk-Kuliś, MD, PhD
NUMBER OF HOURS:	
<b>LECTURES:</b>	10 h
<b>CLASSES:</b>	30 h
<b>SEMINARS:</b>	10 h
GENERAL OBJECTIVES	

## HEMATOLOGY

<b>OBJECTIVE 1:</b>	To familiarize students and acquire the ability to assess the functioning of the hematopoietic system in terms of the production of a certain number and the correct quality of marrow cell lines, their biological role in the system and the effects of a reduced or increased number or a disturbed quality determined both genetically and during individual life.
<b>OBJECTIVE 2:</b>	To familiarize students with the coagulation system in terms of congenital and acquired plasma hemorrhagic diatheses and management of a patient with a coagulation disorder, including the preparation of patients with coagulation disorders for invasive diagnostics and surgery.
<b>OBJECTIVE 3:</b>	Presenting students to the clinical picture as well as diagnostic and therapeutic procedures in individual units of hematological diseases as well as getting acquainted with their epidemiology and social importance.
<b>OBJECTIVE 4:</b>	To acquaint students with the basic principles of transfusions of blood products and bone marrow transplantation.

## LEARNING OUTCOMES

<b>MK1</b>	Knowledge: Student explains the relationship between numerical and cytological abnormalities and the function of organs and systems, clinical symptoms and diagnostic strategy.
<b>MK2</b>	Knowledge: Student presents the role of laboratory tests in the diagnosis, monitoring, prognosis and prevention of organ and systemic disorders as well as the criteria for the selection of these tests and the principles of their performance.
<b>MK3</b>	Knowledge: Student lists the indications for the extension of laboratory and imaging diagnostics in selected disease states and recommended specialist tests.
<b>MK4</b>	Knowledge: Student presents the clinical aspects of hematopoiesis and haemostasis disorders and methods of their laboratory evaluation based on peripheral blood and bone marrow tests in the aspect of morphological and functional changes as well as the mechanisms of disease development.
<b>MK5</b>	Knowledge: Student takes into account the recurrence of disorders (e.g. hemolysis, autoimmune thrombocytopenia) and lists the factors that trigger them.
<b>MK6</b>	Knowledge: Student can interpret ranges of reference values (taking into account age, gender, lifestyle, decision values) and assess the dynamics of changes in laboratory parameters.

## HEMATOLOGY

<b>MK7</b>	Knowledge: Student describes the immunological aspects of bone marrow transplantation and haemotherapy. He lists the types of bone marrow transplantation and the basic indications qualifying the patient for such treatment.
<b>MS1:</b>	Skills: Student is able to conduct a medical history in diseases of the hematopoietic system, including congenital diseases, family history, the onset of the disease and comorbidities in terms of qualification for hematological therapy.
<b>MS2:</b>	Skills: Student can assess skin changes related to hemorrhagic diathesis (thrombocytopenia or plasma) and skin changes related to neoplasms of the hematopoietic system (e.g. leukemic infiltrates, lymphoma) and post bone marrow transplantation graft versus host disease.
<b>MS3:</b>	Skills: Student diagnoses the enlargement of lymph nodes and presents their characteristics, and plans diagnostic methods to be used in the patient.
<b>MS4:</b>	Skills: Student examines the abdominal cavity, diagnoses enlargement of the spleen and / or liver, is able to plan a differential diagnosis
<b>MS5:</b>	Skills: Student examines the oral mucosa, is able to assess the presence of changes in hemorrhagic diathesis, infectious lesions, changes in the course of the graft versus host disease.
<b>MS6:</b>	Skills: Student assists with bone marrow biopsy / trepanobiopsy. He can correctly assess the lack of early complications after surgery.
<b>MS7:</b>	Skills: Student assists in transfusing blood products. The student is able to list the demand for an appropriate blood product and to observe the patient during and after the transfusion.
<b>MC1:</b>	Social Competency: Student understands the need for lifelong learning, can inspire and organize the learning process. Shows the ability and habit of self-education.

## INTRODUCTORY REQUIREMENTS

[1] Basic knowledge of the histology, physiology and pathophysiology of the hematopoietic system.

[2] Basic skills in conducting the medical history and physical examination of the patient.

## COURSE PROGRAM

## DESCRIPTION

## HEMATOLOGY

<b>LECTURE 1:</b>	BLOOD FORMATION PHYSIOLOGY. HEMATOPOETHIC FACTORS IN CLINICAL PRACTICE. Bone marrow as mass, topography and functions. The marrow / peripheral blood barrier, the importance of the qualitative and quantitative barrier. Bone marrow stem cell - assessment methods used in hematology. Development lines of granulopoiesis, lymphopoiesis and erythropoiesis. Hematopoietic hormones, their clinical application (G-CSF, EPO TPO)
<b>LECTURE 2:</b>	PRINCIPLES OF TREATMENT IN ONCOHEMATOLOGY Chemotherapy, targeted drugs, radiotherapy, immunotherapy, including bone marrow transplantation (types of hematopoietic stem cell transplantation, indications and principles of treatment using transplantation)
<b>LECTURE 3:</b>	MYELOYDYSPLASTIC SYNDROMES, ACUTE MYELOID LEUKEMIAS Myelodysplastic syndromes, principles of diagnosis and treatment. Acute myeloid leukemias - clinical picture, diagnosis, classification, treatment principles
<b>LECTURE 4:</b>	CHRONIC MYELOPROLIFERATIVE NEOPLASMS Chronic myeloproliferative neoplasms - chronic myeloid leukemia, Ph (-) myeloproliferative neoplasms, etiopathogenesis, principles of diagnosis and treatment.
<b>LECTURE 5:</b>	LYMPHOMA - basics of diagnosis and treatment Basics of diagnostics and treatment. Lymphoblastic lymphomas, acute lymphoblastic leukemia - clinical picture, diagnosis, classification, treatment principles. Hodgkin's lymphoma, mature B and T lymphocytes, post-transplant lymphoproliferative disease (PTLD). Multiple myeloma.
<b>CLASS 1</b>	Interviews with patients, examination of the abdominal cavity, lymph nodes and oral mucosa. Proposing additional examinations and specialist tests. Interpretation of laboratory tests (taking into account age, sex, lifestyle, decision values) and assessment of the dynamics of changes in laboratory parameters. Getting to know the results of patient tests and their interpretation as well as keeping medical records of a hematological patient
<b>CLASS 2</b>	Transfusion of blood products: indications, rules for ordering various types of preparations, complications related to transfusion, planning the procedure for exposure to infection, keeping a transfusion book in the department. Assisting in transfusions of blood products.
<b>CLASS 3</b>	Assisting with aspiration marrow harvesting, trepanobiopsy. Assisting in the separation of hematopoietic cells, bone marrow transplantation, a visit to the bone marrow transplant department

## HEMATOLOGY

HEMATOLOGY	
DIDACTIC METHODS (APPLIED)	DESCRIPTION
<b>CLASS 4</b>	Microscopic evaluation of peripheral blood and bone marrow preparations in various diseases of the haematopoietic system. Interpretation of phenotyping, cytogenetic and molecular tests used in the diagnosis of hematological diseases
<b>CLASS 5</b>	Outpatient: Conducting a medical and physical examination of a patient in terms of diagnostics of hematological diseases, proposing additional examinations and specialist tests. Interpretation of laboratory tests (taking into account age, sex, lifestyle, decision values) and assessment of the dynamics of changes in laboratory parameters. Outpatient: Caring for a patient after bone marrow transplantation - conducting interviews, physical examination, proposing additional tests and their interpretation
<b>SEMINAR 1</b>	Part A: Principles of physical diagnosis in blood diseases - evaluation of the skin, mucous membranes, lymph nodes - application in the diagnosis and differentiation of hematological diseases and in patient care after bone marrow transplantation. Part B: Laboratory methods for the assessment of the hematopoietic system: blood count, leukogram, myelogram, trepanobiopsy, The importance of cytoenzymatic, immunophenotypic, cytogenetic and molecular tests in the diagnosis of hematological diseases
<b>SEMINAR 2</b>	Anemia - pathogenetic classification, diagnosis, treatment (iron deficiency anemia, haemorrhagic anemia, chronic diseases, hemolytic anemia, Addison-Biermer anemia). Severe aplastic anemia.
<b>SEMINAR 3</b>	Hemorrhagic disorders - thrombocytopenic and plasma disorders - principles of diagnosis and differentiation, general principles of treatment. Preparing a patient for a surgical procedure. Selection of additional laboratory tests, their interpretation, basic principles of patient management after surgery
<b>SEMINAR 4</b>	Diseases with hypercoagulability. Principles of diagnosis and differentiation, general principles of treatment. Preparing a patient for a surgical procedure. Selection of additional laboratory tests, their interpretation, basic principles of patient management after surgery
<b>SEMINAR 5</b>	Primary and secondary deficiencies of humoral and cellular immunity, diagnostics and rules of managing a patient with diagnosed immunodeficiency

HEMATOLOGY	
	Lectures Seminars Teaching at the bedside Case study
STUDENTS WORKLOAD:	
<b>CONTACT HOURS WITH THE ACADEMIC TEACHER</b>	30+10+10 hours
<b>HOURS WITHOUT THE PARTICIPATION OF THE ACADEMIC TEACHER</b>	preparation for classes: 20 HOURS Preparation for the exam: 20 HOURS
<b>TOTAL NUMBER OF HOURS FOR THE COURSE</b>	90 HOURS
CONDITIONS FOR COURSE COMPLETION	
Attendance at all lectures, classes and seminars is obligatory. The condition for admission to the exam is passing the classes and seminars.	
METHODS OF ASSESSMENT:	
<b>IN TERMS OF KNOWLEDGE:</b>	Written test in the field of knowledge carried out after the end of didactic classes in hematology
<b>IN TERMS OF SKILLS:</b>	Practical credit carried out on the last day of the exercises, consisting in passing the skills realized during the exercises.
<b>IN TERMS OF SOCIAL COMPETENCE:</b>	Assessment of activity in classes, observation of behavior towards patients and colleagues, assessment of group work
<b>FORMATIVE:</b>	Summary of acquired skills at the end of each day of exercises
<b>SUMMATIVE (I &amp; II)</b>	<b>I term (EXAM):</b> 50 single-choice test questions <b>II term (RETAKE EXAM):</b> written exam, answer to 3 open ended questions (assessment of each answer on a scale of 1-3 points, minimum to pass obtaining 5 out of possible 9 points)
GRADING SCALE	
3,0 (Satisfactory)	Passing practical competences during the exercises and at <b>least 28 correct test answers</b> or passing the <b>5-point written exam.</b>

## HEMATOLOGY

3,5 (Satisfactory plus)	Passing practical competences during the exercises and at least <b>32 correct test answers</b> or passing the written exam with <b>6 points</b>
4,0 (Good)	Passing practical competences during the exercises and at least <b>38 correct test answers</b> or passing an written exam with <b>7 points</b>
4,5 (Good plus)	Passing practical competences during the exercises and at least <b>43 correct test answers</b> or passing an written exam with <b>8 points</b>
5,0 (Very Good)	Passing practical competences during the exercises least <b>48 correct test answers</b> or passing the <b>9-point written exam</b>

## BASIC LITERATURE

[1] Harrison's Principles of Internal Medicine, Harrison's 21st edition online, <https://accessmedicine.mhmedical.com/>

[2] Materials transferred during lectures, seminars and classes

## SUPPLEMENTARY LITERATURE

[1] Scott D.C. Stern, Adam S. Cifu, Diane Altkorn, Symptom to Diagnosis: An Evidence-Based Guide, 4e, <https://accessmedicine.mhmedical.com/>