

**DANYLO HALYTSKY LVIV NATIONAL MEDICAL UNIVERSITY**

**Department of Internal Medicine N 1**

**Department of Internal Medicine N 2**



**Approved**

First Vice-Rector for scientific and pedagogical work

Assoc. prof. Iryna SOLONYNKO

“ 30 ” 08 2023

**WORK PROGRAMME OF THE EDUCATIONAL DISCIPLINE**

**"Internal Medicine"**

**OK 25.1**

**4 years of study**

**training of specialists of the second (master's) level of higher education**

**Field of Knowledge 22 "Health care"**

**specialties 222 "Medicine"**

Discussed and approved  
on the methodical meetings  
of the Departments of  
Internal Medicine N 1 and  
Internal Medicine N 2  
protocol N 9  
dated 18.04.2023

Head of the Department  
of Internal Medicine N 1

prof. Orest ABRAHAMOVYCH

Head of the Department  
of Internal Medicine N 2

assoc. prof. Orest KOMARYTSYA

Approved

by the Profile Methodical Council  
on the therapeutic disciplines  
protocol N 3 dated 04.05.2023

Head of the Profile Methodical Council  
prof. Olena RADCHENKO

The work programme of the discipline “Internal medicine” (OC 25.1.) 4 year training of specialists of the second level of higher education (Master of medicine) the field of knowledge 22 “Health Care” specialty 222 “Medicine” was composed by the staff of the Department of Internal Medicine No 2 Danylo Halytsky Lviv National Medical University: the Head of the department, Associate Professor Orest Komarytsya; Professor Olena Radchenko, Associate Professor Olga Korolyuk, Associate Professor Anzhelika Filipyuk, Associate Professor Olena Sorokopud, and Assistant professor Oksana Slaba

**Editors:** Associate Professor Orest Komarytsya; Professor Olena Radchenko; Associate Professor Olga Korolyuk

**Reviewers:** Head of Department Propaedeutic of Internal Diseases Professor Roman Dutka

The work programme was discussed and approved by the Profile Methodical Council of therapeutic disciplines Danylo Halytsky Lviv National Medical University

### **Changes and additions to the work programme for 2023-2024 academic year**

№	Contents of changes (additions)	Date and protocol number of the meeting	Notes
1.	The code has been changed from OC 28 to OC 25.1. in accordance with the requirements of the EPP (Educational and professional programs) 2023/2024	May 3, 2023 Protocol No 10	

Head of the Department of Internal Medicine No 2

assoc. prof. Orest Komarytsya



## INTRODUCTION

The work programme of the discipline “Internal medicine” (OC 25.1.) 4 year training of specialists of the second level of higher education Master of medicine the field of knowledge 22 “Health Care” specialty 222 “Medicine” specialization “Internal Medicine” was composed basing on the Law of Ukraine “About Higher Education”, “The procedure for training applicants for higher education Magister of Medicine in higher primary institutions”, Standard of high education – Magister of Medicine branch of knowledge 22 “Health Care”, Specialty 222 “Medicine” (the Order of the Ministry of Education and Science of Ukraine dated November, 8, 2021); the Order of the Ministry of Education and Science of Ukraine No 1254 dated 01.10.2019 “On amendments to the Guidelines for the development of standards of higher education”; the Order of Danylo Halytsky Lviv National Medical University dated March, 15, 2022 “On the introduction of the curriculum for the preparation of applicants for the second (master's) level of higher education in the specialty 222 Medicine”.

According to the Educational plan (the Order of Danylo Halytsky Lviv National Medical University dated 15.03.2022), the study the end-to-end discipline “Internal Medicine” is studied from the 4<sup>th</sup> year to the 6<sup>th</sup> year of study inclusively. The organization of the educational process is carried out according to the European Credit Transfer System of the Organization of the Educational Process (ECTS).

### Description of the discipline (abstract).

The program of “Internal medicine” for the 4<sup>th</sup> year provides the study of the basics of internal medicine and includes the following sections of internal medicine “gastroenterology”, “hepatology” “pulmonology”, and “haematology”, with the emphasis on the study of aetiology, pathogenesis, clinical presentation, diagnostics, treatment, and prophylaxis of the most common internal diseases. The main purpose of the course is to teach students the basics of internal medicine. Skills of interviewing, history taking, clinical examination of the patient, diagnostics, differential diagnostics, treatment and prevention of internal diseases, diagnosis and provision of urgent medical care in case of emergencies, and performing medical manipulations are established. Students participate in the diagnostic and treatment process under the guidance and supervision of tutors. It is also provided familiarization with and acquirement of performing the procedures that most commonly used in the practice of internal medicine. Practical classes and clinical visitations of patients with tutors are the main parts of this course. Each student records and reports the clinical results of the patient's examination to the tutor on a daily basis and writes a patient's record (medical cards). According to the curriculum, there are the following types of classes: a) lectures, b) practical classes, and c) individual work of students.

**The structure of the discipline** The discipline is the part of the educational program for the preparation of masters of medicine and is designed for 7 ECTS credits (210 hours)

The structure of educational discipline	Number of credits, hours, particularly				Year of study, semester	Type of control
	Totally	Classroom		IWS		
		Lectures	Practical classes			
«Internal medicine»	7.0 credits/ 210 hours	26 hours	80 hours	104 hours	4 year, VII-VIII semesters	credit
Particularly during semesters						
Gastroenterology and hepatology	3.5 credits/ 106 hours	14 hours	40 hours	(37+25) 62 hours	VII semester	
Pulmonology and haematology	3.5 credits/ 104 hours	12 hours	40 hours	42 hours	VIII semester	

**The subject** of study of the discipline is diagnosis, treatment and prevention of gastrointestinal, hepatic, respiratory and haematological diseases

### Internal medicine as academic discipline

- a) is based directly on the knowledge of propaedeutic of internal medicine, along with knowledge of propaedeutic of paediatrics, general surgery, and basic disciplines (i.e., medical biology, medical and biological physics, bioorganic and biological chemistry, histology, cytology and embryology, human anatomy, pathomorphology, physiology and pathophysiology, microbiology, virology and immunology, radiology) and integrates with these disciplines;
- b) lays the foundation for students' assimilation of knowledge in specialized clinical professional-practical disciplines.
- c) forms the ability to apply knowledge about internal diseases into the process of further education and professional activity in accordance with the principles of evidence-based medicine

**Interdisciplinary links:** normal anatomy, normal physiology, pathology, pathophysiology, histology, biochemistry, pharmacology, clinical pharmacology, propaedeutic of internal medicine, patient care, infectious diseases, phthisiology, oncology, general surgery, radiology and radiation medicine, microbiology, virology and immunology.

### 1. The purpose and objectives of the discipline

**1.1. The purpose of study** the academic discipline "Internal Medicine" is to form the ability to apply acquired knowledge, skills, and understanding to solve typical tasks of a doctor in the field of health care in the field of gastroenterology, pulmonology, and haematology.

**1.2. The main objectives** of study the discipline “Internal Medicine” during 4<sup>th</sup> year of study are the following:

1. to conduct an interviewing, history taking, and clinical examination of patients with the most common gastrointestinal, hepatic, pulmonary, and haematological diseases; to analyse the obtained results;
2. to determine their etiological and pathogenic factors;
3. to analyse the typical clinical presentation, to identify the clinical variants and complications of these diseases;

4. to make a preliminary diagnosis of these diseases;
5. to administer the laboratory, imaging and functional tests that are required for verification of diagnosis;
6. to make a differential diagnosis, substantiate and establish a clinical diagnosis, basing on the obtained results of laboratory and instrumental tests;
7. to determine the need in activity limitation during treatment, the need for special diet or medical nutrition; to determine the approach, principles, and regimen of therapy; to administer the treatment, including disease-modifying therapy that improve survival or prognosis and prevent complications
8. to determine the need for emergent medical care in case of urgencies or emergencies; to provide the emergency medical care basing on the diagnosis;
9. to carry out the primary and secondary prevention; to assess prognosis, disability, and ability to work in patients with the most common gastrointestinal, hepatobiliary, pancreatic, pulmonary, and haematological diseases;
10. to perform the medical manipulations;
11. to keep medical records;
12. to comply with ethics, bioethics and deontology requirements during professional activities.

**1.3. Competences and learning outcomes**, the formation of which is facilitated by the discipline (relationships with the normative content of the training of higher education applicants, formulated in terms of learning outcomes in the EPP and in the Higher Education Standard).

**General competencies (GC):**

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 reasoned decisions.
7. Ability to work in a team.
8. Ability to interpersonal interaction.
9. Ability to use information and communication technologies.
10. Ability to search and analyse information from various sources.
11. Definiteness and perseverance in terms of tasks and responsibilities
12. Awareness of equal opportunities and gender issues.
13. Ability to realize rights and responsibilities as a society member, realize the values of free democratic civil society and the need for its sustainable development, the supremacy of law, the rights and freedoms of people and citizens.
14. Ability to preserve and multiply the moral, cultural, scientific valuables and acquisitions of society based on an understanding of the history and patterns of development of the subject area, its place in the general system of knowledge about nature and society and the development of society, techniques and technologies, to use various types and forms of motor activity for active rest and leading a healthy lifestyle.

**Professional competencies (PC):**

1. Ability to collect medical information about a patient and analyse clinical data.
2. Ability to determine the necessary list of laboratory and instrumental studies and to evaluate obtained results.
3. Ability to make preliminary and clinical diagnoses
4. Ability to determine the necessary regimen of rest and activity in the treatment and prevention of internal diseases.
5. Ability to determine type of diet and nutrition in the treatment and prevention of internal diseases.
6. Ability to determine the principles of treatment and prevention of internal diseases.
7. Ability to diagnose medical urgencies and emergencies.
8. Ability to determine emergency management and to provide emergency medical aid.
9. Ability to perform medical evacuation measures.
10. Ability to perform medical manipulations.
11. Ability to solve medical problems in a new or unfamiliar environment, in case of incomplete or limited information, considering aspects of social and ethical responsibility.
12. Ability to perform medical record documentation, including electronic forms.
13. Ability to convey own knowledge, conclusions and arguments about health care problems and related issues to specialists and non-specialists, in particular to people who are studying, clear and unambiguous
14. Adherence to ethical principles during work with patients or laboratory animals.
15. Adherence to professional and academic integrity, responsibility for the reliability of the obtained scientific results.

**Program learning outcomes (PLO)**

1. Thorough knowledge about the structure of professional activity and ability to perform professional activities requiring updating and integration of knowledge, realization of responsibility for professional development and further professional training with a high level of autonomy.
2. Knowledge and understanding of fundamental and clinical biomedical sciences at a level sufficient for solving professional tasks in the field of health care.
3. Specialized conceptual knowledge including scientific achievements in the field of health care, ability to conduct researches, critical understanding of problems in the field of medicine and related interdisciplinary problems.
4. Highlighting and identifying leading clinical symptoms and syndromes mentioned in the EQC list 1; formulation of preliminary diagnoses of common internal disease mentioned in the EQC list 2, using data from the patient's history, physical examination, and knowledge about human organs and systems.

5. Diagnoses formulation of internal diseases mentioned in the EQC list 4, taking into account the age and gender, patient's complaints, history of life and disease, evaluation of psychomotor and physical development, vital signs, physical examination of internal organs and systems, and results of additional tests.
6. Reasonable formulation of final clinical diagnosis EQC list 2 with differential diagnosis after analysis of the received subjective and objective data of physical examination and additional tests; implementation of relevant ethical and legal norms, working under the supervision of a managing physician in the conditions of a health care facility.
7. Planning and interpretation of the results of additional tests (laboratory, functional, imaging etc.) mentioned in the EQC list 4 for patients with internal diseases mentioned in the EQC list 2.
8. Determination the leading clinical syndrome and establishment of factors determining severity of victim's / patient's condition with a reasonable decision and assessing the person's condition in any situation mentioned in EQC list 3 and in any case (i.e., in out- or in-patient setting, out of health care facility, including situations of emergencies, lack of information or limited time).
9. Determination way and principles of treatment for patients with diseases listed in the EQC list 2, taking into account age and gender, in- or out-patient setting or extremal situations (including stages of medical evacuation) depending on previously established clinical diagnosis and according to existing algorithms, standards, ethical and legal norms. Substantiation of personalized recommendations under the control of the head physician of a medical institution.
10. Determination of rest and activity regimens, diet, nutrition, patient's ability to work, basing on the preliminary and/or final clinical diagnosis, following existing algorithms and standards and relevant ethical and legal norms
11. Determination tactics and providing urgent medical care in emergencies listed in the EQS list 3, including situations with limited time, in accordance with existing clinical standards and protocols.
12. Creation of rational medical routes for patients; organization of interaction with colleagues (including those in other hospitals, institutions or organizations), applying tools for the promotion of medical services in the market based on the analysis of the needs of the population.
13. Performing medical manipulations mentioned in the EQS list 5 in the inpatient or outpatient setting depending on previously established diagnosis and/or specific indications with reasoned decision following existing clinical standards and protocols, relevant ethical and legal norms.
14. Determination patient's functioning state or professional suitability, disability, duration of incapacity with the preparation of relevant medical documents basing on clinical diagnosis and course of the disease.
15. Development and implementation of anti-epidemic or preventive measures for different diseases at individual or population level.
16. Purposeful search for information in the professional literature and databases, analysis, evaluation and adequate use of the obtained information.
17. Use of modern digital technologies, specialized software, statistical methods of data analysis to solve complex problems of health care and research work.
18. Clear and unambiguous transfer of own knowledge, conclusions and arguments about health care problems and related issues to specialists and non-specialists.
19. Management of healthcare work problems that can be complex, unpredictable and require new strategic approaches; organization of work and professional development of personnel taking into account the acquired skills of effective team work with adherence to leadership positions, appropriate quality, accessibility and fairness, ensuring the provision of integrated medical care.
20. Free communication using native language or English (in oral or writing form) to discuss professional activities, research and projects.
21. Effective decisions on health care issues, assessing the necessary resources and taking into account social, economic and ethical consequences.

#### Matrix of competencies

No	Competency	Kn <sup>a</sup>	Sk <sup>b</sup>	Co <sup>c</sup>	AR <sup>d</sup>
1	2	3	4	5	6
<b>General competencies (GC)</b>					
GC1	Ability to abstract thinking, analysis and synthesis.	Kn-1	Sk-1	Co-1	AR-1
GC2	Ability to learn and master modern knowledge.	Kn-1	Sk-3	Co-2	AR-3
GC3	Ability to apply knowledge in practical situations.	Kn-1	Sk-2	Co-1	AR-1
GC4	Knowledge and understanding of the subject area and professional activity.	Kn-2	Sk-2	Co-2	AR-2
GC5	Ability to adapt and act in a new situation.		Sk-3		AR-2
GC6	Ability to make reasoned decisions.	Kn-1	Sk-3	Co-1	AR-1
GC7	Ability to work in a team.	Kn-2	Sk-3	Co-1	AR-2
GC8	Ability to interpersonal interaction.	Kn-1	Sk-3	Co-1	AR-2
GC10	Ability to use information and communication technologies.	Kn-2	Sk-3	Co2	AR-3
GC11	Ability to search and analyse information from various sources.	Kn-2	Sk-2	Co2	AR-2
GC12	Definiteness and perseverance in terms of tasks and responsibilities	Kn-2	Sk-3		AR-3
GC13	Awareness of equal opportunities and gender issues.	Kn-2	Sk-1	Co-1	AR-1
1	2	3	4	5	6
GC14	Ability to realize rights and responsibilities as a member of society, realize the values of civil free democratic society and the need for its sustain development, the supremacy of law, the rights and freedoms of people and citizens.	Kn-1	Sk-2	Co-1	AR-3

GC15	Ability to preserve and multiply the moral, cultural, scientific valuables and acquisitions of society based on an understanding of the history and patterns of development of the subject area, its place in the general system of knowledge about nature and society, the development of society, techniques and technologies; usage various types and forms of motor activity for active rest and healthy lifestyle	Kn-2	Sk-3		AR-3
<b>Professional competencies (PC)</b>					
PC1	Ability to collect medical information about a patient and analyse clinical data.	Kn-2	Sk-3	Co-2	AR-3
PC2	Ability to determine the necessary list of laboratory and instrumental studies and to evaluate obtained results	Kn-2	Sk-3		AR-1
PC3	Ability to make preliminary and clinical diagnoses	Kn-2	Sk-3		AR-2
PC4	Ability to determine the necessary regimen of rest and physical activity in the treatment and prevention of internal diseases	Kn-2	Sk-2	Co-1	AR-1
PC5	Ability to determine type of diet and nutrition in the treatment and prevention of internal diseases.	Kn-2	Sk-1	Co-1	AR-1
PC6	Ability to determine the principles of treatment and prevention of internal diseases.	Kn-2	Sk-3	Co-1	AR-1
PC7	Ability to diagnose medical urgencies and emergencies	Kn-2	Sk-3	Co-1	AR-2
PC8	Ability to determine emergency management and to provide emergency medical aid.	Kn-2	Sk-3	Co-1	AR-2
PC9	Ability to perform medical evacuation measures	Kn-2	Sk-2	Co-1	AR-2
PC10	Ability to perform medical manipulations.	Kn-1	Sk-3	Co-1	AR-1
PC11	Ability to solve medical problems in a new or unfamiliar environment, incomplete or limited information, considering aspects of social and ethical responsibility	Kn-2	Sk-3	Co-1	AR-2
PC16	Ability to perform medical record documentation, including electronic forms	Kn-2	Sk-3	Co-1	AR-1
PC21	Ability to convey own knowledge, conclusions and arguments about health care problems and related issues to specialists and non-specialists, in particular to people who are studying, clear and unambiguous	Kn-2	Sk-3	Co-2	AR-2
PC24	Adherence to ethical principles during work with patients or laboratory animals.	Kn-1	Sk-2	Co-1	AR-1
PC25	Adherence to professional and academic integrity, responsibility for the reliability of the obtained scientific results.	Kn-2	Sk-2	Co-2	AR-3
<b>Integral competency</b>					
The ability to solve typical and complex specialized tasks and practical problems in professional activities in the field of health care, or during learning process that involves research conduction and/or implementation of innovations, and is characterized by the complexity and uncertainty of conditions and requirements.		Kn-2	Sk-2	Co-2	AR-3

Notes: <sup>a</sup>Kn = Knowledge; <sup>b</sup>Sk = Skill; <sup>c</sup>Co = Communication; <sup>d</sup>AR = Autonomy and responsibility

#### Program learning outcomes

Learning outcome code	The content of the learning outcome	Reference to the competencies matrix code
1	2	3
Kn-1	To know anatomy, physiology of internal organs and systems, skin, skeleton, connective tissue, and blood	PLO-1-3
Kn-2	To know pathomorphology and pathophysiology of common internal diseases	PLO-1-3
Kn-3	To know the biochemistry of major metabolic processes, mechanisms of action of the main classes of medications	PLO-1-3
Kn-4	To know characteristics of the pathogens that may cause internal diseases and the basics of epidemiology	PLO-1-3
Kn-5	To know the methods of evaluation of integrated health indicators; environmental factors; system of preventive measures; socioeconomic and biological determinants of health, methods for doctor's activity assessment	PLO-15-19
Sk-1	To interview complaints and medical history, to perform physical examination	PLO-4-5
Sk-2	To evaluate obtained results of additional tests	PLO-5,7
Sk-3	To perform basic medical manipulations	PLO-13
Co-1	To highlight the leading symptoms and syndromes. To diagnose the disease. To plan necessary additional tests. To make differential diagnosis.	PLO-6-8
Co-2	To determine diet / plan of nutrition, to plan preventive strategies and tactics.	PLO-9-12
Co-3	To administer treatment and to determine its duration.	PLO-9-12
Co-4	To diagnose emergencies and to determine the tactics of emergent medical care.	PLO-11

1	2	3
Co-5	To determine health indicators; environmental factors; preventive measures; determinants of health, efficiency of doctor's activity and quality of medical care	PLO-15-19
AR-1	To organize the work of medical staff; to form rational medical routes of patients; to interact with colleagues, organizations and institutions.	PLO-18-21
AR-2	To guide by rights, freedoms and responsibilities. To improve professional level. To adhere to the requirements of ethics, bioethics and deontology.	PLO-18-21
AR-3	To form the purposes and structure of personal activity. To adhere to a healthy lifestyle and self-control.	PLO-18-21

Notes: Kn = Knowledge; Sk = Skill; Co=Communication; AR=Autonomy and responsibility; PLO= Program learning outcomes

## 2. The format and scope of the discipline

The format of the course (full-time or distance learning)	Full-time	
	Number of hours	Number of groups
lectures	26	
practical classes (practices)	80	
seminars	0	
individual work of students (IWS)	104	

## 3. Structure of the discipline

Thematic plan	Lectures	Practices	IWS
<b>The main principles of diagnosis, treatment and prevention of major gastrointestinal, hepatobiliary, and pancreatic diseases</b>			
Topic 1. Peculiarities of internal diseases in elderly and in patients living with obesity		5	3
Topic 2. Gastroesophageal reflux disease and chronic gastritis	2	5	5
Topic 3. Peptic ulcer diseases and other ulcers of the stomach and duodenum.	2	5	5
Topic 4. Chronic diseases of the large and small intestine.	2	5	6
Topic 5. Cholelithiasis, chronic cholecystitis, functional biliary disorders	2	5	5
Topic 6. Chronic hepatitis	2	5	5
Topic 7. Liver cirrhosis	2	5	4
Topic 8. Chronic pancreatitis	2	5	4
Writing of medical record	-	-	25
<b>2. The main principles of diagnosis, treatment and prevention of major pulmonary and haematological diseases</b>			
Topic 9. Respiratory failure. SARSCoV2 infection (COVID-19)		5	4
Topic 10. Pneumonia	1	5	5
Topic 11. Pleurisy, pleural effusion, suppurative destructive pulmonary diseases	1	5	6
Topic 12. Chronic obstructive respiratory disease (COPD)	2	5	5
Topic 13. Bronchial asthma	2	5	5
Topic 14. Anaemias	2	5	5
Topic 15. Acute and chronic leukaemias, malignant lymphomas	2	5	6
Topic 16. Multiple myeloma, haemorrhagic disorders	2	5	6
<b>Total number of hours 210 / 7 ECTS credits</b>	<b>26</b>	<b>80</b>	<b>104</b>
<b>Summary control</b>	<b>Credit</b>		

## 4. Thematic plan of lectures

No	Subject	Hours
1.	Diseases caused by <i>Helicobacter pylori</i> and gastroesophageal reflux disease: clinical presentation, principles of diagnosis and treatment.	2
2.	Chronic gastritis, peptic ulcer disease of the stomach and duodenum: principles of diagnosis and treatment.	2
3.	Chronic diseases of the intestine: principles of diagnosis and treatment.	2
4.	Chronic cholecystitis, gallstone disease, functional biliary disorders: principles of diagnosis and treatment.	2
5.	Chronic hepatitis: principles of diagnosis and treatment.	2
6.	Liver cirrhosis: principles of diagnosis and treatment.	2
7.	Chronic pancreatitis: principles of diagnosis and treatment.	2
8.	Pneumonia and pleurisy: principles of diagnosis and treatment.	2
9.	Chronic obstructive pulmonary disease: principles of diagnosis and treatment.	2
10.	Bronchial asthma: principles of diagnosis and treatment.	2
11.	Iron-deficiency, megaloblastic, haemolytic, and aplastic anaemias: principles of diagnosis and treatment	2
12.	Acute and chronic leukaemias, malignant lymphoma and multiple myeloma: principles of diagnosis and treatment.	2
13.	Haemorrhagic disorders: principles of diagnosis and treatment	2
Total number of hours		26

### .5. Thematic plan of practical classes

No	Subject	Hours
<b>1. The main principles of diagnosis, treatment and prevention of gastrointestinal, hepatobiliary, and pancreatic diseases</b>		
1.	Peculiarities of internal diseases in elder persons and patients living with obesity and related comorbidity.	5
2.	Gastroesophageal reflux disease and chronic gastritis: the main principles of diagnosis, treatment and prevention	5
3.	Peptic ulcer diseases and other ulcers of the stomach and duodenum: the main principles of diagnosis, treatment and prevention	5
4.	Chronic diseases of the large and small intestine: the main principles of diagnosis, treatment and prevention	5
5.	Cholelithiasis, chronic cholecystitis, functional biliary disorders: the main principles of diagnosis, treatment and prevention	5
6.	Chronic hepatitis: the main principles of diagnosis, treatment and prevention	5
7.	Liver cirrhosis: the main principles of diagnosis, treatment and prevention	5
8.	Chronic pancreatitis: the main principles of diagnosis, treatment and prevention	5
<b>2. The main principles of diagnosis, treatment and prevention of major respiratory and haematological diseases</b>		
9.	Respiratory failure, COVID-19: the main principles of diagnosis, treatment and prevention	5
10.	Pneumonia: the main principles of diagnosis, treatment and prevention	5
11.	Pleurisy, pleural effusion, suppurative destructive pulmonary diseases: the main principles of diagnosis, treatment and prevention	5
12.	Chronic obstructive respiratory disease (COPD): the main principles of diagnosis, treatment and prevention	5
13.	Bronchial asthma: the main principles of diagnosis, treatment and prevention	5
14.	Anaemias: the main principles of diagnosis, treatment and prevention	5
15.	Acute and chronic leukaemias, malignant lymphomas: the main principles of diagnosis, treatment and prevention	5
16.	Multiple myeloma, haemorrhagic disorders: the main principles of diagnosis, treatment and prevention	5
<b>Total number of hours</b>		<b>80</b>

### 6. Thematic plan of individual work of students

No	Subject	Hours
<b>1. The main principles of diagnosis, treatment and prevention of major gastrointestinal, hepatobiliary, and pancreatic diseases</b>		
1.	Preparation for the practice “Peculiarities of internal diseases in elder persons and patients living with obesity and related comorbidity”, Mastering the skills of anthropometry, body mass index (BMI) calculation, obesity grade assessment, and interpretation of laboratory tests results.	3
2.	Preparation for the practice “Gastroesophageal reflux disease and chronic gastritis: the main principles of diagnosis, treatment and prevention”. Mastering the skills of interpreting thematic results of urea breath tests, 24-hour oesophageal pH monitoring, intragastric topographic express pH-metric test, endoscopic findings, and biopsy results.	5
3.	Preparation for the practice “Peptic ulcer diseases and other ulcers of the stomach and duodenum: the main principles of diagnosis, treatment and prevention”. Mastering the skills of interpreting thematic results of urea breath tests, endoscopic findings, and biopsy results.	5
4.	Preparation for the practice “Chronic diseases of the large and small intestine: the main principles of diagnosis, treatment and prevention”. Mastering the skills of interpreting thematic endoscopic findings, results of the coprocytogram, faecal calprotectin, antibodies to tissue transglutaminase and gliadin peptides, hydrogen tests.	6
5.	Preparation for the practice “Cholelithiasis, chronic cholecystitis, functional biliary disorders: the main principles of diagnosis, treatment and prevention”. Mastering the skills of interpreting thematic results of ultrasonography of the liver, bile ducts and gallbladder, microscopic and biochemical examination of bile obtained by multi-moment duodenal probing.	5
6.	Preparation for the practice “Chronic hepatitis: the main principles of diagnosis, treatment and prevention”. Mastering the skills of interpreting the results of CBC, blood biochemistry (total protein, protein fractions, total bilirubin with fractions, liver enzymes activity), blood serology (serum markers for autoimmune hepatitis and viral hepatitis B, C, D), and polymerase chain reactions for HBV, HCV, HDV (qualitative and quantitative analysis; viral genotyping).	5



7.	Preparation for the practice “Liver cirrhosis: the main principles of diagnosis, treatment and prevention”. Mastering the skills of interpreting the results of blood biochemistry (ALT, AST, GGTP, AP, bilirubin and its fractions, total protein with fractions, glucose, coagulation tests), ultrasound of the liver, gallbladder, pancreas, spleen and vessels of the portal system.	4
8.	Preparation for the practice “Chronic pancreatitis: the main principles of diagnosis, treatment and prevention”. Mastering the skills of interpreting the results of laboratory tests (CBC, serum levels of $\alpha$ -amylase, lipase, glucose, insulin, C-peptide, pancreatic polypeptide, glucagon; test with sugar load, galactose, D-xylose, stool test for faecal elastase 1, urine test for $\alpha$ -amylase) and abdominal ultrasound.	4
9	Writing of medical record	25
<b>2. The main principles of diagnosis, treatment and prevention of major pulmonary and haematological diseases</b>		
10.	Preparation for the practice “Respiratory failure, SARSCoV2 infection (COVID-19): the main principles of diagnosis, treatment and prevention”. Mastering the skills of pulse oximetry, interpreting the results of oxygen saturation, arterial blood gas analysis, lung function tests, lung ultrasound, and chest radiographs.	4
11.	Preparation for the practice “Pneumonia: the main principles of diagnosis, treatment and prevention”. Mastering the skills of interpreting the results of laboratory tests (CBC, acute phase reactants, sputum analysis (i.e., microscopic, bacteriological, Gram stain smear microscopy, culture and antibiogram), lung ultrasound and chest radiographs in two projections.	5
12.	Preparation for the practice “Pleurisy, pleural effusion, suppurative destructive pulmonary diseases: the main principles of diagnosis, treatment and prevention”. Mastering the skills of interpreting the results of laboratory tests (CBC, acute phase reactants, sputum and pleural fluid analyses (microscopy, chemistry, culture with antibiogram), lung ultrasound, and chest radiographs.	6
13.	Preparation for the practice “COPD: the main principles of diagnosis, treatment and prevention”. Mastering the skills of interpreting the results of lung function tests and sputum testing.	5
14.	Preparation for the practice “Bronchial asthma: the main principles of diagnosis, treatment and prevention”. Mastering the skills of interpreting the results of lung function tests, sputum and allergic testing.	5
15.	Preparation for the practice “Anaemias: the main principles of diagnosis, treatment and prevention”. Mastering the skills of interpreting the results of CBC, blood chemistry (serum levels of iron, ferritin, iron transferrin saturation, total iron binding capacity, folate, cobalamin, total bilirubin, LDH, haptoglobin), and bone marrow biopsy.	5
16.	Preparation for the practice “Acute and chronic leukaemias, malignant lymphomas: the main principles of diagnosis, treatment and prevention”. Mastering the skills of interpreting the results of CBC, bone marrow and lymph node biopsy, cytochemical studies, flow-cytometry, and imaging tests on the topic. Mastering the method of transfusion of blood components and blood substitutes	6
17.	Preparation for the practice “Multiple myeloma, haemorrhagic disorders: the main principles of diagnosis, treatment and prevention”. Mastering the skills of interpreting the results of CBC, serum and urine protein, radiographic examination of bones, coagulation tests and platelets function tests. Mastering the method of determining blood type.	6
<b>Total number of hours</b>		<b>104</b>

### 7. Individual tasks

Individual work is a mandatory part of students' work, which is separately evaluated. It includes current work (writing home self-training tasks preparing to practical classes and writing of thematic patient's card, which are mandatory) and individual educational or research tasks. The quality of performance of mandatory individual work is included into the assessment of study success. Additional individual work is assessed with extra points as it has different levels of difficulty, and must be completed before the end of the semester. Forms of additional individual work include the following: report of an abstract/ case presentation at a practical session or clinical conferences, writing of theses or articles, mastering practical skills, review of scientific literature by topic. Independent works from the discipline "Internal Medicine" are completed by students in written form, the control of implementation control is performed constantly during the semester during practical classes.

### 8. Teaching methods

Practical, visual, verbal, work with a book, video method, interactive methods (business games, role-playing games, clinical cases), etc. Interactive methods such as business games, role-playing games, and cases are used during practical classes. The organization of classes consists of the following blocks: program and information, education and methodical, control, educational research, and auxiliary.

**The program and information block** is presented on the official website of the University.

**The educational and methodical block** includes theoretical lecture materials (available on MISA platform), which are conducted with the use of multimedia presentations. Methodical materials for students and teachers are updated every year and are available both in printed form and electronic version (on MISA platform), which is given to students for individual work at home. The software “Chest pain” and a phantom of the human torso for cardiopulmonary resuscitation are also used. Educational and practical materials also include educational DVD-films about methodology of physical examination etc., depending on the subject of classes (e.g., invasive diagnostic and therapeutic procedures in cardiology (angiography, stenting, shunting), atlases of clinical diagnosis, instrumental methods of examination etc.).

**The control block** contains materials for the current control of student activities (questions, MCQs, tests from the Licensing Exam "Step-2" base available for students on MISA platform).

**The educational and research block** contains topics of creative tasks, abstracts, educational and research tasks, term qualification works, etc. The department stores multimedia materials of student scientific-practical conferences of the medical faculty, which are examples and / or illustrative material for training, in addition, students have the opportunity to participate directly in procedures of echocardiography and ultrasonography of abdominal organs.

**The auxiliary block** is filled with video, audio, multimedia materials and electronic manuals, the materials of which can be processed on portable devices (phone, smartphone, netbook, book reader, etc.). To ensure the independent work of students, they are offered links to electronic resources that can be used.

**Course policy** In teaching and studying the course of Internal Medicine 5th year, all teachers and students adhere to the policy of academic integrity, intolerance to violations of medical and human deontology and ethics. Examination of patients at the clinical bases of the department complies with the principles of the Helsinki Declaration of the World Medical Association on ethical principles of scientific medical research with human participation (1964, 2004, 2013) and Orders of the Ministry of Health of Ukraine No 690 (2009), No 944 (2009) and No 616 (2012).

#### 9. Control methods: oral, written, test, programmable, practical control, self-control.

**Types of control:** current and final.

**The form of final control of study success:** credit

**Evaluation criteria** Control measures include current and final control and certification of graduates.

#### 10. Current control

Current control is performed during practical classes and is aimed checking the assimilation of educational material by students. Current control is based on a MCQ-assessment of the initial level of knowledge, checking writing home self-training task, and thematic practical work during the class. Practical work include clinical cases, examination of patients, writing examination protocols with formulation of diagnosis with rationale, writing and explanation of further diagnostic tests, estimation of the results of available tests in medical records, formulation of final clinical diagnosis and explanation of differential diagnosis, and administration of treatment and preventive measures for the patient.

Rating of each practice accounts all types of work provided by the programme using a 4-point national scale. The student must receive positive rating for each practical class. The forms of assessment of current educational activities are standard, and include control of theoretical and practical training.

Learning outcome code	Method of verifying learning outcomes Assessment criteria
For example: Kn-1-5, Sk-1-3, Co-1-5, AR-1-3	<i>The field defines the methods and technologies of assessment of students' knowledge, particularly, a list of all types of work that students are required to perform during practical class and the criteria for their assessment. For example, test control, protocol of patient's examination, demonstration of practical skills, etc. Each evaluation method must be described separately.</i> <b>Excellent ("5"):</b> 90-100% answers for format A tests (10 MCQs, single best answer of 5 given answers) are correct; correct clear, complete and logical answers for the questions about the current topic, including questions and tasks for individual work. Presence of qualitative and complete home task. A student closely links theory to practice and correctly demonstrates practical skills; able to solve clinical cases of increased complexity and to summarize the material. A student correctly conducts physical examination of thematic patient, has the necessary communication skills, and uses the principles of medical deontology. <b>Good ("4"):</b> 70-89% answers for format A tests are correct; clear and right answers for the questions about the current topic, including questions and tasks for individual work. There is a qualitative home task. A student correctly demonstrates practical skills or makes non-significant mistakes; able to solve typical clinical cases and cases of moderate complexity. A student correctly conducts physical examination of thematic patient, has the necessary practical skills, and makes no fatal mistakes during diagnosis and treatment. A student may communicate with patients and colleagues, using the principles of medical deontology.
Training code	
L-1-7 P-1-16, IWS-1-16	<b>Satisfactory ("3"):</b> 60-69% answers for format A tests are correct. Homework is incomplete or contains mistakes. Inadequate or incomplete answers for the questions about the current topic and individual work. A student cannot build a clear, logical answer; makes significant mistakes when answering and demonstrating practical skills; solves only easy typical clinical cases, has a minimum of necessary practical skills; performs examination and plan treatments with errors that do not threaten the patient's life; has a minimum of communication skills, uses the principles of medical deontology. <b>Unsatisfactory ("2"):</b> less than 60% answers for format A tests are correct. The home task is written very bad or is absent. A student does not know the material of the current topic, cannot answer independently and logically to additional questions, does not understand the content of the material; makes significant mistakes when answering and demonstrating practical skills; conducts examination and plan treatment with fatal consequences for a patient; has insufficient communication or verbal skills; insufficiently uses the principles of medical deontology.

#### 11. The form of final control of study success

General rating system	Participation in the work during the semester (credit) on a 200-point scale	
Rating scales	Traditional 4-point scale, multi-point (200-point) scale, ECTS rating scale	
Admission criteria for final control	Attendance of all practical classes with total rating $\geq 120$ points of 200 points	
Type of final control	Methods of final control	Passing criteria

Credit	Positively estimated all practices with conversion from a 4-point scale to a 200-point scale as describe in "Criteria, rules and procedures for evaluating the results of student's learning activities"	Minimum rating 120 points; Maximum rating 200 points
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### 12. Scheme of calculation and distribution of points received by students

Assessment is one of the final stages of educational activity and determination of educational success.

Evaluation is based on the amount for the Practice of Stimulation Medicine in Internal Medicine, Surgery, Obstetrics and Gynecology, Pediatrics. The calculation of the number of points is carried out on the basis of the grades received by the student on a traditional scale during the study of the discipline by calculating the arithmetic average (AA), which is converted into points on a multi-point scale, using formula:  $x = AA \cdot 200 / 5$

For convenience, a calculation table is given on a 200-point scale for disciplines ending with a credit as follows:

Scale	4-p.	200-p.	4-p.	200-p.	4-p.	200-p.	4-p.	200-p.	4-p.	200-p.	4-p.	200-p.	Less than 3 Not enough
	5	200	4.67	187	4.32	173	3.99	160	3.67	147	3.32	133	
	4.97	199	4.65	186	4.3	172	3.97	159	3.65	146	3.3	132	
	4.95	198	4.62	185	4.27	171	3.94	158	3.62	145	3.27	131	
	4.92	197	4.6	184	4.24	170	3.92	157	3.57	143	3.25	130	
	4.9	196	4.57	183	4.22	169	3.89	156	3.55	142	3.22	129	
	4.87	195	4.52	181	4.19	168	3.87	155	3.52	141	3.2	128	
	4.85	194	4.5	180	4.17	167	3.84	154	3.5	140	3.17	127	
	4.82	193	4.47	179	4.14	166	3.82	153	3.47	139	3.15	126	
	4.8	192	4.45	178	4.12	165	3.79	152	3.45	138	3.12	125	
	4.77	191	4.42	177	4.09	164	3.77	151	3.42	137	3.1	124	
	4.75	190	4.4	176	4.07	163	3.74	150	3.4	136	3.07	123	
	4.72	189	4.37	175	4.04	162	3.72	149	3.37	135	3.02	121	
	4.7	188	4.35	174	4.02	161	3.7	148	3.35	134	3	120	

Points from the discipline are independently converted to both the ECTS scale and the 4-point scale. The points of the ECTS scale are not converted into a 4-point scale and vice versa. The points of students studying in one specialty, taking into account the number of points scored in the discipline, are ranked on the ECTS scale as follows:

ECTS assessment	Statistical parameter
"A"	Best 10 % of students
"B"	Next 25 % of students
"C"	Next 30 % students
"D"	Next 25 % students
"E"	The remaining 10% of students

Discipline scores for students who successfully completed the programme are converted into a traditional 4-point scale:

A multi-point (200) scale scoring	A 4-point scale scoring
From 170 to 200 points	"5"
From 140 to 169 points	"4"
From 139 to the minimum that must be scored by student	"3"
Below the minimum that must be scored by student	"2"

The ECTS score is not converted to the traditional scale, as the ECTS scale and the four-point scale are independent. The objectivity of the assessment of students' learning activities is checked by statistical methods (correlation coefficient between ECTS assessment and assessment on a national scale).

### 13. Material, technical and methodological support of the discipline

1. Work programme and syllabus of the discipline.
2. Plans for practical classes and individual student's work.
3. Recommendations and guides for learning the course of internal medicine for students and teachers.
4. Tasks for independent work
5. Questions, tests (MCQs) and clinical cases for current control
6. Algorithms for treatment and emergency care according to the standards of evidence-based medicine
7. Algorithms for performing skills practices and medical manipulations
8. Results of laboratory tests; electrocardiograms, radiographs, lung function test results, etc.
9. Models, mannequins, multimedia equipment, presentations for training.

### 14. Recommended literature

1. eMPendium – electronic compendium "Internal diseases" in open access [Electronic resource]. Access mode: <https://empendium.com/mcmtextbook/>.
2. Davidson's Principles and Practice of Medicine 23rd Edition. Editors: Stuart Ralston, Ian Penman, Mark Strachan Richard Hobson. Elsevier. - 2018. - 1440 p.
3. USMLE Step 2 CK Lecture Notes 2017: Internal Medicine (Kaplan Test Prep). - 2016. - Published by Kaplan Medical. - 474 p.
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  14. Peptic Ulcer Disease: Introduction. Johns Hopkins Medicine 600 North Wolfe Street, Baltimore, Maryland 21287 <https://www.hopkinsmedicine.org>
  15. World Gastroenterology Organisation Global Guideline. Inflammatory bowel disease: a global perspective. Munich, Germany: World Gastroenterology Organisation (WGO); 2015. <https://www.worldgastroenterology.org/guidelines/global-guidelines/inflammatory-bowel-disease-ibd/inflammatory-bowel-disease-ibd-english>
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  31. NCCN Clinical Practice Guidelines in Oncology: Hodgkin Lymphoma. National Comprehensive Cancer Network. Available from [http://www.nccn.org/professionals/physician\\_gls/pdf/hodgkins.pdf](http://www.nccn.org/professionals/physician_gls/pdf/hodgkins.pdf). Version 2.2020 - April 17, 2020.
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## 15. Information resources

Website: <https://new.meduniv.lviv.ua/kafedry/kafedra-vnutrishnoyi-medytyny-2/>

Phone of the Department: 0322601490

E-mail: [kaf\\_internalmed\\_2@meduniv.lviv.ua](mailto:kaf_internalmed_2@meduniv.lviv.ua)

The tutor of the student scientific circle: Professor Yeugen Dzis

### **Websites related to Internal Medicine:**

<http://www.ers-education.org/guidelines.aspx>

<http://www.esmo.org/Guidelines/Haematological-Malignancies>

<https://ehaweb.org/organization/committees/swg-unit/scientific-working-groups/structureand-guidelines/>

<https://www.aasld.org/>

[www.ginasthma.org](http://www.ginasthma.org)

<http://www.gastro.org/guidelines>

<https://www.diabetes.org/>

<http://goldcopd.org>

<http://www.oxfordmedicaleducation.com/>

<http://www.eagen.org/>

<https://www.nice.org.uk>

<https://www.ueg.eu/guidelines/>

**DANYLO HALYTSKY LVIV NATIONAL MEDICAL UNIVERSITY**

**Department of Internal Medicine N 1  
Department of Internal Medicine N 2**



**Approved**  
First Vice-Rector for scientific and pedagogical work  
Assoc. prof. Iryna SOLONYNKO  
" 30 " 08 2023

**WORK PROGRAMME OF THE EDUCATIONAL  
DISCIPLINE**

**"Internal medicine"**

**OK 25.1**

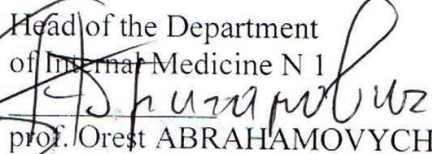
**5 years of study**

**training of specialists of the second (master's) level of higher education**

**Field of Knowledge 22 "Health care"**

**specialties 222 "Medicine"**

Discussed and approved  
on the methodical meetings  
of the Departments of  
Internal Medicine N 1 and  
Internal Medicine N 2  
protocol N 9  
dated 18.04.2023

Head of the Department  
of Internal Medicine N 1  
  
prof. Orest ABRAHAMOVYCH

Head of the Department  
of Internal Medicine N 2  
  
assoc. prof. Orest KOMARYTSYA

Approved  
by the Profile Methodical Council  
on the therapeutic disciplines  
protocol N 3 dated 04.05.2023

Head of the Profile Methodical Council  
prof. Olena RADCHENKO  


Lviv – 2023

The work programme of the discipline “Internal medicine” (OC 25.1.) 5 year training of specialists of the second level of higher education (Master of medicine) the field of knowledge 22 “Health Care” specialty 222 “Medicine” was composed by the staff of the Department of Internal Medicine No 2 Danylo Halytsky Lviv National Medical University: the Head of the department, Associate Professor Orest Komarytsya; Professor Olena Radchenko, Associate Professor Olga Korolyuk, Associate Professor Anzhelika Filipyuk, Associate Professor Olena Sorokopud, and Assistant professor Oksana Slaba

**Editors:** Associate Professor Orest Komarytsya; Professor Olena Radchenko; Associate Professor Olga Korolyuk

**Reviewers:** Head of Department Propaedeutic of Internal Diseases Professor Roman Dutka

The work programme was discussed and approved by the Profile Methodical Council of therapeutic disciplines Danylo Halytsky Lviv National Medical University

### Changes and additions to the work programme for 2023-2024 academic year

№	Contents of changes (additions)	Date and protocol number of the meeting	Notes
1.	The code has been changed from OC 28 to OC 25.1. in accordance with the <i>requirements</i> of the EPP (Educational and professional programs) 2023/2024	May 3, 2023 Protocol No 10	

Head of the Department of Internal Medicine No 2

assoc. prof. Orest Komarytsya



## INTRODUCTION

The work programme of the discipline “Internal medicine” (OC 25.1.) 5 year training of specialists of the second level of higher education Master of medicine the field of knowledge 22 “Health Care” specialty 222 “Medicine” specialization “Internal Medicine” was composed basing on the Law of Ukraine “About Higher Education”, “The procedure for training applicants for higher education Magister of Medicine in higher primary institutions”, Standard of high education – Magister of Medicine branch of knowledge 22 “Health Care”, Specialty 222 “Medicine” (the Order of the Ministry of Education and Science of Ukraine dated November, 8, 2021); the Order of the Ministry of Education and Science of Ukraine No 1254 dated 01.10.2019 “On amendments to the Guidelines for the development of standards of higher education”; the Order of Danylo Halytsky Lviv National Medical University dated March, 15, 2022 “On the introduction of the curriculum for the preparation of applicants for the second (master's) level of higher education in the specialty 222 Medicine”.

According to the Educational plan (the Order of Danylo Halytsky Lviv National Medical University dated 15.03.2022), the study the end-to-end discipline “Internal Medicine” is studied from the 4<sup>th</sup> year to the 6<sup>th</sup> year of study inclusively. The organization of the educational process is carried out according to the European Credit Transfer System of the Organization of the Educational Process (ECTS).

### Description of the discipline (abstract).

The program of “Internal medicine” for the 5<sup>th</sup> year provides the study of the basics of internal medicine and includes the following sections of internal medicine “cardiology”, “rheumatology”, and “nephrology”, with the emphasis on the study of aetiology, pathogenesis, clinical presentation, diagnostics, treatment, and prophylaxis of the most common internal diseases. The main purpose of the course is to teach students the basics of internal medicine. Skills of interviewing, history taking, clinical examination of the patient, diagnostics, differential diagnostics, treatment and prevention of internal diseases, diagnosis and provision of urgent medical care in case of emergencies, and performing medical manipulations are established. Students participate in the diagnostic and treatment process under the guidance and supervision of tutors. It is also provided familiarization with and acquirement of performing the procedures that most commonly used in the practice of internal medicine. Practical classes and clinical visitations of patients with tutors are the main parts of this course. Each student records and reports the clinical results of the patient's examination to the tutor on a daily basis and writes a patient's record (medical cards). According to the curriculum, there are the following types of classes: a) lectures, b) practical classes, and c) individual work of students.

**The structure of the discipline** The discipline is the part of the educational program for the preparation of masters of medicine and is designed for 7.5 ECTS credits (224 hours)

The structure of educational discipline	Number of credits, hours, particularly				Year of study, semester	Type of control
	Totally	Classroom		IWS		
		Lectures	Practical classes			
«Internal medicine»	7.5 credits/ 224 hours	14	100 hours	110 hours	5 year (IX-X semesters)	Examination
During semesters						
Section 1. Cardiovascular diseases	3.0 credits/ 143 hours	10	64	44+25	IX semester	
Section 2. Rheumatic diseases	1.5 credits/ 56 hours	2	24	30	X semester	
Section 3. Renal diseases	1.0 credit/ 25 hours	2	12	11	X semester	Examination

**The subject** of study of the discipline is diagnosis, treatment and prevention of cardiovascular, rheumatic, and renal diseases

### Internal medicine as academic discipline

- d) is based directly on the knowledge of propaedeutic of internal medicine, along with knowledge of propaedeutic of paediatrics, general surgery, and basic disciplines (i.e., medical biology, medical and biological physics, bioorganic and biological chemistry, histology, cytology and embryology, human anatomy, pathomorphology, physiology and pathophysiology, microbiology, virology and immunology, radiology) and integrates with these disciplines;
- e) lays the foundation for students' assimilation of knowledge in specialized clinical professional-practical disciplines.
- f) forms the ability to apply knowledge about internal diseases into the process of further education and professional activity in accordance with the principles of evidence-based medicine

**Interdisciplinary links:** normal anatomy, normal physiology, pathology, pathophysiology, histology, biochemistry, pharmacology, clinical pharmacology, propaedeutic of internal medicine, patient care, infectious diseases, phthiology, oncology, general surgery, radiology and radiation medicine, microbiology, virology and immunology.

### 1. The purpose and objectives of the discipline

**1.1. The purpose** of the course of educational discipline “Internal Medicine” is to develop the ability to apply the acquired knowledge and skills for the typical tasks of a physician in the field of health care, the scope of which is provided by the determining of the certain lists of syndromes and symptoms of diseases and emergencies that require the special management approach, laboratory and instrumental assessment, and medical manipulations.

**1.2. The main objectives** of study the discipline “Internal Medicine 5<sup>th</sup> year” are the following:



1. to conduct an interviewing, history taking, and clinical examination of patients with the main cardiovascular, renal and rheumatic diseases; to analyse the obtained results;
2. to determine the etiological and pathogenic factors of the most common cardiovascular, renal and rheumatic diseases;
3. to analyse the typical clinical presentation, to identify the clinical variants and complications of the most common cardiovascular, renal and rheumatic diseases;
4. to make a preliminary diagnosis of the most common cardiovascular, renal and rheumatic diseases;
5. to plan obligatory laboratory, imaging, endoscopic and functional tests that are necessary for verification of the most common cardiovascular, rheumatic and renal diseases, and their complications;
6. to make a differential diagnosis, substantiate and establish a clinical diagnosis of the most common cardiovascular, renal and rheumatic diseases, basing on the obtained results of laboratory and instrumental tests;
7. to determine need in activity limitation, regimen of rest and activity during treatment of the most common cardiovascular, renal and rheumatic diseases;
8. to determine the need for special diet or medical nutrition during treatment of the most common cardiovascular, renal and rheumatic diseases;
9. to determine the approach, principles, and regimen of therapy of the most common cardiovascular, renal and rheumatic diseases;
10. to administer the treatment, including disease-modifying therapy that improve survival and/or prognosis for the most common cardiovascular, renal and rheumatic diseases, and their complications
11. to determine the need for emergent medical care in case of urgencies or emergencies;
12. to provide the emergency medical care basing on the diagnosis;
13. to carry out the primary and secondary prevention of the most common cardiovascular, renal and rheumatic diseases;
14. to assess prognosis, disability, and ability to work in patients with the most common cardiovascular, renal and rheumatic diseases;
15. to perform the medical manipulations;
16. to keep medical records;
17. to comply with ethics, bioethics and deontology requirements during the professional activities.

**1.3. Competences and learning outcomes**, the formation of which is facilitated by the discipline (relationships with the normative content of the training of higher education applicants, formulated in terms of learning outcomes in the EPP and in the Higher Education Standard).

**General competencies (GC):**

15. Ability to abstract thinking, analysis and synthesis.
16. Ability to learn and master modern knowledge.
17. Ability to apply knowledge in practical situations.
18. Knowledge and understanding of the subject area and understanding of professional activity.
19. Ability to adapt and act in a new situation.
20. Ability to make reasoned decisions.
21. Ability to work in a team.
22. Ability to interpersonal interaction.
23. Ability to use information and communication technologies.
24. Ability to search and analyse information from various sources.
25. Definiteness and perseverance in terms of tasks and responsibilities
26. Awareness of equal opportunities and gender issues.
27. Ability to realize rights and responsibilities as a society member, realize the values of free democratic civil society and the need for its sustainable development, the supremacy of law, the rights and freedoms of people and citizens.
28. Ability to preserve and multiply the moral, cultural, scientific valuables and acquisitions of society based on an understanding of the history and patterns of development of the subject area, its place in the general system of knowledge about nature and society and the development of society, techniques and technologies, to use various types and forms of motor activity for active rest and leading a healthy lifestyle.

**Professional competencies (PC):**

16. Ability to collect medical information about a patient and analyse clinical data.
17. Ability to determine the necessary list of laboratory and instrumental studies and to evaluate obtained results.
18. Ability to make preliminary and clinical diagnoses
19. Ability to determine the necessary regimen of rest and activity in the treatment and prevention of internal diseases.
20. Ability to determine type of diet and nutrition in the treatment and prevention of internal diseases.
21. Ability to determine the principles of treatment and prevention of internal diseases.
22. Ability to diagnose medical urgencies and emergencies.
23. Ability to determine emergency management and to provide emergency medical aid.
24. Ability to perform medical evacuation measures.
25. Ability to perform medical manipulations.
26. Ability to solve medical problems in a new or unfamiliar environment, in case of incomplete or limited information, considering aspects of social and ethical responsibility.
27. Ability to perform medical record documentation, including electronic forms.

28. Ability to convey own knowledge, conclusions and arguments about health care problems and related issues to specialists and non-specialists, in particular to people who are studying, clear and unambiguous
29. Adherence to ethical principles during work with patients or laboratory animals.
30. Adherence to professional and academic integrity, responsibility for the reliability of the obtained scientific results.

**Program learning outcomes (PLO)**

22. Thorough knowledge about the structure of professional activity and ability to perform professional activities requiring updating and integration of knowledge, realization of responsibility for professional development and further professional training with a high level of autonomy.
23. Knowledge and understanding of fundamental and clinical biomedical sciences at a level sufficient for solving professional tasks in the field of health care.
24. Specialized conceptual knowledge including scientific achievements in the field of health care, ability to conduct researches, critical understanding of problems in the field of medicine and related interdisciplinary problems.
25. Highlighting and identifying leading clinical symptoms and syndromes mentioned in the EQC list 1; formulation of preliminary diagnoses of common internal disease mentioned in the EQC list 2, using data from the patient's history, physical examination, and knowledge about human organs and systems.
26. Diagnoses formulation of internal diseases mentioned in the EQC list 4, taking into account the age and gender, patient's complaints, history of life and disease, evaluation of psychomotor and physical development, vital signs, physical examination of internal organs and systems, and results of additional tests.
27. Reasonable formulation of final clinical diagnosis EQC list 2 with differential diagnosis after analysis of the received subjective and objective data of physical examination and additional tests; implementation of relevant ethical and legal norms, working under the supervision of a managing physician in the conditions of a health care facility.
28. Planning and interpretation of the results of additional tests (laboratory, functional, imaging etc.) mentioned in the EQC list 4 for patients with internal diseases mentioned in the EQC list 2.
29. Determination the leading clinical syndrome and establishment of factors determining severity of victim's / patient's condition with a reasonable decision and assessing the person's condition in any situation mentioned in EQC list 3 and in any case (i.e., in out- or in-patient setting, out of health care facility, including situations of emergencies, lack of information or limited time).
30. Determination way and principles of treatment for patients with diseases listed in the EQC list 2, taking into account age and gender, in- or out-patient setting or extremal situations (including stages of medical evacuation) depending on previously established clinical diagnosis and according to existing algorithms, standards, ethical and legal norms. Substantiation of personalized recommendations under the control of the head physician of a medical institution.
31. Determination of rest and activity regimens, diet, nutrition, patient's ability to work, basing on the preliminary and/or final clinical diagnosis, following existing algorithms and standards and relevant ethical and legal norms
32. Determination tactics and providing urgent medical care in emergencies listed in the EQS list 3, including situations with limited time, in accordance with existing clinical standards and protocols.
33. Creation of rational medical routes for patients; organization of interaction with colleagues (including those in other hospitals, institutions or organizations), applying tools for the promotion of medical services in the market based on the analysis of the needs of the population.
34. Performing medical manipulations mentioned in the EQS list 5 in the inpatient or outpatient setting depending on previously established diagnosis and/or specific indications with reasoned decision following existing clinical standards and protocols, relevant ethical and legal norms.
35. Determination patient's functioning state or professional suitability, disability, duration of incapacity with the preparation of relevant medical documents basing on clinical diagnosis and course of the disease.
36. Development and implementation of anti-epidemic or preventive measures for different diseases at individual or population level.
37. Purposeful search for information in the professional literature and databases, analysis, evaluation and adequate use of the obtained information.
38. Use of modern digital technologies, specialized software, statistical methods of data analysis to solve complex problems of health care and research work.
39. Clear and unambiguous transfer of own knowledge, conclusions and arguments about health care problems and related issues to specialists and non-specialists.
40. Management of healthcare work problems that can be complex, unpredictable and require new strategic approaches; organization of work and professional development of personnel taking into account the acquired skills of effective team work with adherence to leadership positions, appropriate quality, accessibility and fairness, ensuring the provision of integrated medical care.
41. Free communication using native language or English (in oral or writing form) to discuss professional activities, research and projects.
42. Effective decisions on health care issues, assessing the necessary resources and taking into account social, economic and ethical consequences.

**Matrix of competencies**

No	Competency	Kn <sup>a</sup>	Sk <sup>b</sup>	Co <sup>c</sup>	AR <sup>d</sup>
<b>General competencies (GC)</b>					
GC1	Ability to abstract thinking, analysis and synthesis.	Kn1	Sk1	Co1	AR1
GC2	Ability to learn and master modern knowledge.	Kn1	Sk3	Co2	AR3
GC3	Ability to apply knowledge in practical situations.	Kn1	Sk2	Co1	AR1
GC4	Knowledge and understanding of the subject area, understanding of professional activity.	Kn2	Sk2	Co2	AR2
GC5	Ability to adapt and act in a new situation.		Sk3		AR2
GC6	Ability to make reasoned decisions.	Kn1	Sk3	Co1	AR1
GC7	Ability to work in a team.	Kn2	Sk3	Co1	AR2
GC8	Ability to interpersonal interaction.	Kn1	Sk3	Co1	AR2
GC10	Ability to use information and communication technologies.	Kn2	Sk3	Co2	AR3
GC11	Ability to search and analyse information from various sources.	Kn2	Sk2	Co2	AR2
GC12	Definiteness and perseverance in terms of tasks and responsibilities	Kn2	Sk3		AR3
GC13	Awareness of equal opportunities and gender issues.	Kn2	Sk1	Co1	AR1
GC14	Ability to realize rights and responsibilities as a member of society, realize the values of civil free democratic society and the need for its sustainable development, the supremacy of law, the rights and freedoms of people and citizens.	Kn1	Sk2	Co1	AR3
GC15	Ability to preserve and multiply the moral, cultural, scientific valuables and acquisitions of society based on an understanding of the history and patterns of development of the subject area, its place in the general system of knowledge about nature and society, the development of society, techniques and technologies; to use various types and forms of motor activity for active rest and healthy lifestyle.	Kn2	Sk3		AR3
<b>Professional competencies (PC)</b>					
PC1	Ability to collect medical information about a patient and analyse clinical data.	Kn2	Sk3	Co2	AR3
PC2	Ability to determine the necessary list of additional tests and to evaluate obtained results	Kn2	Sk3		AR1
PC3	Ability to make preliminary and clinical diagnoses	Kn2	Sk3		AR2
PC4	Ability to determine the necessary regimen of rest and physical activity in the treatment and prevention of internal diseases	Kn2	Sk2	Co1	AR1
PC5	Ability to determine type of diet, nutrition in the treatment and prevention of internal diseases.	Kn2	Sk1	Co1	AR1
PC6	Ability to determine the principles of treatment and prevention of internal diseases.	Kn2	Sk3	Co1	AR1
PC7	Ability to diagnose medical urgencies and emergencies	Kn2	Sk3	Co1	AR2
PC8	Ability to determine emergency management and to provide emergency medical aid.	Kn2	Sk3	Co1	AR2
PC9	Ability to perform medical evacuation measures	Kn2	Sk2	Co1	AR2
PC10	Ability to perform medical manipulations.	Kn1	Sk3	Co1	AR1
PC11	Ability to solve medical problems in a new or unfamiliar environment, in case of incomplete or limited information, considering aspects of social and ethical responsibility	Kn2	Sk3	Co1	AR2
PC16	Ability to perform medical record documentation, including electronic forms	Kn2	Sk3	Co1	AR1
PC21	Ability to convey own knowledge, conclusions and arguments about health care problems and related issues to specialists and non-specialists, in particular to people who are studying, clear and unambiguous	Kn2	Sk3	Co2	AR2
PC24	Adherence to ethical principles during work with patients or laboratory animals.	Kn1	Sk2	Co1	AR1
PC25	Adherence to professional and academic integrity, responsibility for the reliability of the obtained scientific results.	Kn2	Sk2	Co2	AR3
<b>Integral competency</b>					
Ability to solve typical and complex specialized tasks and practical problems in professional activities in the field of health care, or during learning process, involving research conduction / implementation of innovations, and is characterized by the complexity and uncertainty of conditions and requirements.		Kn2	Sk2	Co2	AR3

Notes: <sup>a</sup>Kn = Knowledge; <sup>b</sup>Sk = Skill; <sup>c</sup>Co = Communication; <sup>d</sup>AR = Autonomy and responsibility

**Program learning outcomes**

Learning outcome code	The content of the learning outcome	Reference to the competencies matrix code
1	2	3
Kn-1	To know anatomy, physiology of internal organs and systems, skin, skeleton, connective tissue, and blood	PLO-1-3
Kn-2	To know pathomorphology and pathophysiology of common internal diseases	PLO-1-3
Kn-3	To know the biochemistry of major metabolic processes, mechanisms of action of the main classes of medications	PLO-1-3
Kn-4	To know characteristics of the pathogens that may cause internal diseases and the basics of epidemiology	PLO-1-3

1	2	3
Kn-5	To know the methods of evaluation of integrated health indicators; environmental factors; system of preventive measures; socioeconomic and biological determinants of health, methods for doctor's activity assessment	PLO-15-19
Sk-1	To interview complaints and medical history, to perform physical examination	PLO-4-5
Sk-2	To evaluate obtained results of additional tests	PLO-5,7
Sk-3	To perform basic medical manipulations	PLO-13
Co-1	To highlight the leading symptoms and syndromes. To diagnose the disease. To plan necessary additional tests. To make differential diagnosis.	PLO-6-8
Co-2	To determine diet / plan of nutrition, to plan preventive strategies and tactics.	PLO-9-12
Co-3	To administer treatment and to determine its duration.	PLO-9-12
Co-4	To diagnose emergencies and to determine the tactics of emergent medical care.	PLO-11
Co-5	To determine health indicators; environmental factors; preventive measures; determinants of health, efficiency of doctor's activity and quality of medical care	PLO-15-19
AR-1	To organize the work of medical staff; to form rational medical routes of patients; to interact with colleagues, organizations and institutions.	PLO-18-21
AR-2	To guide by rights, freedoms and responsibilities. To improve professional level. To adhere to the requirements of ethics, bioethics and deontology.	PLO-18-21
AR-3	To form the purposes and structure of personal activity. To adhere to a healthy lifestyle and self-control.	PLO-18-21

Notes: Kn = Knowledge; Sk = Skill; Co=Communication; AR=Autonomy and responsibility; PLO= Program learning outcomes

## 2. The format and scope of the discipline

The format of the course (full-time or distance learning)	Full-time	
	Number of hours	Number of groups
Type of training sessions		
lectures	14	
practical classes (practices)	100	
seminars	0	
individual work of students (IWS)	110	

## 3. Structure of the discipline

Thematic plan	Lectures	Practices	IWS
<b>1. The main principles of diagnosis, treatment and prevention of major cardiovascular diseases</b>			
Topic 1. Essential arterial hypertension	1	4	3
Topic 2. Secondary arterial hypertension	1	4	3
Topic 3. Atherosclerosis, chronic forms of coronary artery disease	2	4	3
Topic 4. Acute coronary syndrome: unstable angina. The role of statins in CV risk reduction.	1	4	3
Topic 5. Acute myocardial infarction	1	4	3
Topic 6. Pulmonary heart and pulmonary embolism, COVID-19.		4	3
Topic 7. Infective endocarditis		4	2
Topic 8. Acute rheumatic fever		4	3
Topic 9. Congenital heart defects, acquired valve diseases		4	3
Topic 10. Cardiomyopathies	1	4	3
Topic 11. Myocarditis and pericarditis	1	4	3
Topic 12. Cardiac arrhythmias		4	3
Topic 13. Heart blocks		4	3
Topic 14. Modern principles of treatment of cardiac rhythm and conduction disorders		4	2
Topic 15. Acute heart failure	1	4	2
Topic 16. Chronic heart failure	1	4	2
Writing of medical record			25
<b>2. The main principles of diagnosis, treatment and prevention of major rheumatic diseases</b>			
Topic 17. Systemic lupus erythematosus	1	4	5
Topic 18. Systemic sclerosis and dermatomyositis	1	4	5
Topic 19. Systemic vasculitis		4	5
Topic 20. Osteoarthritis and gout		4	5
Topic 21. Rheumatoid arthritis		4	5
Topic 22. Ankylosing spondylitis and reactive arthritis		4	5
<b>3. The main principles of diagnosis, treatment and prevention of major renal diseases</b>			
Topic 23. Acute kidney injury and pyelonephritis	1	4	3
Topic 24. Chronic kidney disease, glomerulonephritis, tubulointerstitial nephritis		4	5
Topic 25. Chronic renal failure, kidney amyloidosis	1	4	3
<b>Total number of hours 224 / 7.5 ECTS credits</b>	<b>14</b>	<b>100</b>	<b>110</b>
<b>Summary control</b>	<b>examination</b>		

## 4. Thematic plan of lectures

No	Subject	Hours
1.	Arterial hypertension: the main principles of diagnosis, treatment and prevention.	2
2.	Atherosclerosis, chronic forms of coronary artery disease: the main principles of diagnosis, treatment and prevention.	2
3.	Acute coronary syndrome: the main principles of diagnosis, treatment and prevention.	2
4.	Myocarditis and cardiomyopathies: the main principles of diagnosis, treatment and prevention.	2
5.	Heart failure: the main principles of diagnosis, treatment and prevention.	2
6.	Systemic connective tissue disorders: the main principles of diagnosis, treatment and prevention.	2
7.	Acute and chronic glomerulonephritis, chronic kidney disease, and chronic renal failure: the main principles of diagnosis, treatment and prevention	2
Total number of hours		14

#### 5. Thematic plan of practical classes

No	Subject	Hours
<b>1. The main principles of diagnosis, treatment and prevention of major cardiovascular diseases</b>		
1.	Essential arterial hypertension: the main principles of diagnosis, treatment and prevention.	4
2.	Secondary arterial hypertension: the main principles of diagnosis, treatment and prevention.	4
3.	Atherosclerosis and chronic forms of coronary artery disease: the main principles of diagnosis, treatment and prevention.	4
4.	Acute coronary syndrome: the main principles of diagnosis, treatment and prevention. The role of statins in cardiovascular risk reduction.	4
5.	Acute myocardial infarction: the main principles of diagnosis, treatment and prevention.	4
6.	Pulmonary heart and pulmonary embolism: the main principles of diagnosis, treatment and prevention. Diagnosis and principles of therapy of acute coronavirus disease (COVID-19).	4
7.	Infective endocarditis: the main principles of diagnosis, treatment and prevention.	4
8.	Acute rheumatic fever: the main principles of diagnosis, treatment and prevention.	4
9.	Congenital heart defects, acquired valve diseases: the main principles of diagnosis, treatment and prevention.	4
10.	Cardiomyopathies: the main principles of diagnosis, treatment and prevention.	4
11.	Myocarditis and pericarditis: the main principles of diagnosis, treatment and prevention.	4
12.	Cardiac arrhythmias: the main principles of diagnosis.	4
13.	Heart blocks: the main principles of diagnosis.	4
14.	Modern principles of treatment and prevention of cardiac rhythm and conduction disorders.	4
15.	Acute heart failure: the main principles of diagnosis, treatment and prevention.	4
16.	Chronic heart failure: the main principles of diagnosis, treatment and prevention.	4
<b>2. The main principles of diagnosis, treatment and prevention of major rheumatic diseases</b>		
17.	Systemic lupus erythematosus: the main principles of diagnosis, treatment and prevention.	4
18.	Systemic sclerosis and dermatomyositis: the main principles of diagnosis, treatment and prevention.	4
19.	Systemic vasculitis: the main principles of diagnosis, treatment and prevention.	4
20.	Osteoarthritis and gout: the main principles of diagnosis, treatment and prevention.	4
21.	Rheumatoid arthritis: the main principles of diagnosis, treatment and prevention.	4
22.	Ankylosing spondylitis and reactive arthritis: the main principles of diagnosis, treatment and prevention.	4
<b>3. The main principles of diagnosis, treatment and prevention of major renal diseases</b>		
23.	Acute kidney injury and pyelonephritis: the main principles of diagnosis, treatment and prevention.	4
24.	Glomerulonephritis, tubulointerstitial nephritis, and chronic kidney disease: the main principles of diagnosis, treatment and prevention.	4
25.	Chronic renal failure, kidney amyloidosis: the main principles of diagnosis, treatment and prevention.	4
<b>Total number of hours</b>		<b>100</b>

#### 6. Thematic plan of individual work of students

No	Subject	Hours
<b>1</b>	<b>2</b>	<b>3</b>
<b>Part 1. The main principles of diagnosis, treatment and prevention of major cardiovascular diseases</b>		
1.	Preparation for the practical class “Essential arterial hypertension (AH): the main principles of diagnosis, treatment and prevention”. Mastering the skills of blood pressure measuring on the upper and lower limbs, assessment of ankle-brachial index, and ECG interpretation. Mastering the skills of choice of antihypertensive agents in particular clinical case.	3
2.	Preparation for the practical class “Secondary AH: the main principles of diagnosis, treatment and prevention”. Mastering the skills of interpreting the results of ultrasound examination of the thyroid gland, adrenal glands, kidneys, and Doppler echocardiography.	3

1	2	3
3.	Preparation for the practical class “Atherosclerosis and chronic forms of coronary artery disease: the main principles of diagnosis, treatment and prevention”. Mastering the skills of interpreting the results of serum lipid profile and ECG.	3
4.	Preparation for the practical class “Acute coronary syndrome: the main principles of diagnosis, treatment and prevention. The role of statins in cardiovascular risk reduction”. Mastering the skills of interpreting the results of ECG and blood biochemistry (i.e., markers of myocardial necrosis). Mastering the skills of choice of statins considering lipid-lowering and pleiotropic properties, and possible adverse effects.	3
5.	Preparation for the practical class “Acute myocardial infarction: the main principles of diagnosis, treatment and prevention”. Mastering the skills of interpreting the results of chest radiographs, ECG, and Doppler echocardiography.	3
6.	Preparation for the practical class “Pulmonary heart and pulmonary embolism: the main principles of diagnosis, treatment and prevention. Diagnosis and principles of therapy of acute coronavirus disease (COVID-19)”. Mastering the skills of interpreting the results of Doppler echocardiography, ECG, and laboratory tests (e.g., CBC, blood coagulation tests, D-dimers, serum procalcitonin, RT-PCR for SARSCoV2).	3
7.	Preparation for the practical class “Infective endocarditis: the main principles of diagnosis, treatment and prevention”. Mastering the skills of interpreting the results of Doppler echocardiography and laboratory tests (CBC, blood biochemistry, blood serology, blood culture with antibiogram).	2
8.	Preparation for the practical class “Acute rheumatic fever: the main principles of diagnosis, treatment and prevention”. Mastering the skills of interpreting the results of ECG and blood tests (e.g., CBC, total serum protein with fractions, acute phase reactants, ASLO titre).	3
9.	Preparation for the practical class “Congenital heart defects, acquired valve diseases: the main principles of diagnosis, treatment and prevention.” Mastering the skills of interpreting the results of chest radiographs and Doppler echocardiography.	3
10.	Preparation for the practical class “Cardiomyopathies: the main principles of diagnosis, treatment and prevention”. Mastering the skills of interpreting the results of ECG, Doppler echocardiography, and blood tests (markers of myocardial necrosis, BNP, proNT-BNP).	3
11.	Preparation for the practical class “Myocarditis and pericarditis: the main principles of diagnosis, treatment and prevention”. Mastering the skills of interpreting the results of ECG, Doppler echocardiography, and blood tests (markers of myocardial necrosis, BNP, proNT-BNP).	3
12.	Preparation for the practical class “Cardiac arrhythmias: the main principles of diagnosis”. Mastering the skills of interpreting the results of ECG and Doppler echocardiography.	3
13.	Preparation for the practical class “Heart blocks: the main principles of diagnosis.” Mastering the skills of interpreting the results of ECG.	3
14.	Preparation for the practical class “Modern principles of treatment and prevention of cardiac rhythm and conduction disorders”. Mastering the skills of choice of antiarrhythmic agents considering their advantages and disadvantages in particular clinical case.	2
15.	Preparation for the practical class “Acute heart failure: the main principles of diagnosis, treatment and prevention”. Mastering the skills of interpreting the results of ECG, Doppler echocardiography, and chest radiography.	2
16.	Preparation for the practical class “Chronic heart failure: the main principles of diagnosis, treatment and prevention”. Mastering the skills of interpreting the results of ECG, Doppler echocardiography, and blood tests (i.e., BNP, proNT-BNP)	2
	Writing of medical record	25
<b>Part 2. The main principles of diagnosis, treatment and prevention of major rheumatic diseases</b>		
17.	Preparation for the practical class “Systemic lupus erythematosus: the main principles of diagnosis, treatment and prevention”. Mastering the skills of interpreting the results of blood tests (CBC, serum protein electrophoresis, acute phase reactants, renal and liver profiles, ASLO titre, ANA, dsDNA antibodies, Sm-antigen etc.) and urinalysis.	5
18.	Preparation for the practical class “Systemic sclerosis and dermatomyositis: the main principles of diagnosis, treatment and prevention”. Mastering the skills of interpreting the results of blood tests (i.e., CBC, serum protein electrophoresis, creatine phosphokinase, acute phase reactants, renal and liver profiles, SCL-70, Jo-1, etc.) and urinalysis.	5
19.	Preparation for the practical class “Systemic vasculitis: the main principles of diagnosis, treatment and prevention”. Mastering the skills of interpreting the results of blood tests (i.e., CBC, serum protein electrophoresis, acute phase reactants, renal and liver profiles, pANCA, cANCA, serological markers for viral hepatitis B and C, etc.) and urinalysis.	5
20.	Preparation for the practical class “Osteoarthritis and gout: the main principles of diagnosis, treatment and prevention”. Mastering the skills of interpreting the results of joint radiography and laboratory tests (i.e., CBC, acute phase reactants, serum uric acid level, renal profile, synovial fluid analysis etc.).	5
1	2	3

21.	Preparation for the practical class “Rheumatoid arthritis: the main principles of diagnosis, treatment and prevention”. Mastering the skills of interpreting the results of joints radiography and laboratory tests (e.g., CBC, urinalysis, acute phase reactants, rheumatoid factor, anti-CCP antibodies, and synovial fluid analysis).	5
22.	Preparation for the practical class “Ankylosing spondylitis and reactive arthritis: the main principles of diagnosis, treatment and prevention”. Mastering the skills of interpreting the results of joints and sacroileal radiographs and laboratory tests (e.g., CBC, urinalysis, acute phase reactants, rheumatoid factor, anti-CCP antibodies, and synovial fluid analysis).	5
<b>Part 3. The main principles of diagnosis, treatment and prevention of major renal diseases</b>		
23.	Preparation for the practical class “Acute kidney injury and pyelonephritis: the main principles of diagnosis, treatment and prevention”. Mastering the skills of interpreting the results of kidney ultrasound, CBC, blood biochemistry, urine tests and urine culture.	3
24.	Preparation for the practical class “Chronic kidney disease, tubulointerstitial nephritis, glomerulonephritis: the main principles of diagnosis, treatment and prevention”. Mastering the skills of interpreting the results of CBC, urinalysis, blood biochemistry (i.e., acute phase reactants, protein electrophoresis, plasma glucose, uric acid level, renal profile, lipid profile, etc.), calculation of estimated glomerular filtration rate (eGFR).	5
25.	Preparation for the practical class “Chronic renal failure, kidney amyloidosis: the main principles of diagnosis, treatment and prevention”. Mastering the skills of interpreting the results of CBC, urinalysis, blood biochemistry and serology (i.e., acute phase reactants, total protein with fractions, plasma glucose, uric acid level, renal profile, lipid profile, amyloid markers, eGFR)	3
Total number of hours		110

### 7. Individual work

Individual work is a mandatory part of students' work, which is separately evaluated. It includes current work (writing home self-training tasks preparing to practical classes and writing of thematic patient's card, which are mandatory) and individual educational or research tasks. The quality of performance of mandatory individual work is included into the assessment of study success. Additional individual work is assessed with extra points as it has different levels of difficulty, and must be completed before the end of the semester. Forms of additional individual work include the following: report of an abstract/ case presentation at a practical session or clinical conferences, writing of theses or articles, mastering practical skills, review of scientific literature by topic. Independent works from the discipline "Internal Medicine" are completed by students in written form, the control of implementation control is performed constantly during the semester during practical classes.

During the training, students must perform curation of patients with the following diseases:

Essential arterial hypertension	Cardiomyopathy	Systemic diseases: systemic lupus erythematosus, systemic sclerosis, dermatomyositis, polymyositis, vasculitis
Secondary arterial hypertension	Heart failure	
Chronic CAD	Valve diseases	
Unstable angina	Cardiac arrhythmias	
Acute myocardial infarction	Heart blocks	Ankylosing spondylitis
Chronic pulmonary heart	Rheumatoid arthritis	Glomerulonephritis
Pulmonary embolism	Reactive arthritis	Pyelonephritis
Infective endocarditis, myocarditis, pericarditis	Osteoarthritis	Chronic kidney disease
Acute rheumatic fever, chronic rheumatic valve disease	Gout	Chronic renal failure

The organization of the educational process should ensure the participation of students in the curation of hospitalized patients. If there is no possibility to demonstrate a patient with a disease that corresponds to the subject of the practical class, students fill in protocols, modelling presentation of the disease relevant to the topic according to tutor's recommendations. Daily patient examination reports are provided to a teacher for the control and assessment. The teacher ensure that each student receives the necessary competence in the following areas: questioning the patient and history taking, clinical examination, description and report of obtained results, diagnostic decisions and determining approach for management and treatment (critical thinking), and writing patient's medical cards.

### 8. Teaching methods

Practical, visual, verbal, work with a book, video method, interactive methods (business games, role-playing games, clinical cases), etc. Interactive methods such as business games, role-playing games, and cases are used during practical classes. The organization of classes consists of the following blocks: program and information, education and methodical, control, educational research, and auxiliary.

**The program and information block** is presented on the official website of the University.

**The educational and methodical block** includes theoretical lecture materials (available on MISA platform), which are conducted with the use of multimedia presentations. Methodical materials for students and teachers are updated every year and are available both in printed form and electronic version (on MISA platform), which is given to students for individual work at home. The software “Chest pain” and a phantom of the human torso for cardiopulmonary resuscitation are also used. Educational and practical materials also include educational DVD-films about methodology of physical examination etc., depending on the subject of classes (e.g., invasive diagnostic and therapeutic procedures in cardiology (angiography, stenting, shunting), atlases of clinical diagnosis, instrumental methods of examination etc.).

**The control block** contains materials for the current control of student activities (questions, MCQs, tests from the Licensing Exam "Step-2" base available for students on MISA platform).

**The educational and research block** contains topics of creative tasks, abstracts, educational and research tasks, term qualification works, etc. The department stores multimedia materials of student scientific-practical conferences of the medical faculty, which are examples and / or illustrative material for training, in addition, students have the opportunity to participate directly in procedures of echocardiography and ultrasonography of abdominal organs.

**The auxiliary block** is filled with video, audio, multimedia materials and electronic manuals, the materials of which can be processed on portable devices (phone, smartphone, netbook, book reader, etc.). To ensure the independent work of students, they are offered links to electronic resources that can be used.

**Course policy.** In teaching and studying the course of Internal Medicine 5th year, all teachers and students adhere to the policy of academic integrity, intolerance to violations of medical and human deontology and ethics. Examination of patients at the clinical bases of the department complies with the principles of the Helsinki Declaration of the World Medical Association on ethical principles of scientific medical research with human participation (1964, 2004, 2013) and Orders of the Ministry of Health of Ukraine No 690 (2009), No 944 (2009) and No 616 (2012).

**9. Control methods: oral, written, test, programmable, practical control, self-control.**

**Types of control:** current and final.

**The form of final control of study success:** examination.

**10. Current control**

Current control is performed during practical classes and is aimed checking the assimilation of educational material by students. Current control is based on a MCQ-assessment of the initial level of knowledge, checking writing home self-training task, and thematic practical work during the class. Practical work include clinical cases, examination of patients, writing examination protocols with formulation of diagnosis with rationale, writing and explanation of further diagnostic tests, estimation of the results of available tests in medical records, formulation of final clinical diagnosis and explanation of differential diagnosis, and administration of treatment and preventive measures for the patient.

Rating of each practice accounts all types of work provided by the programme using a 4-point national scale. The student must receive positive rating for each practical class. The forms of assessment of current educational activities are standard, and include control of theoretical and practical training.

Learning outcome code	Method of verifying learning outcomes Assessment criteria
For example: Kn-1-5, Sk-1-3, Co-1-5, AR-1-3	<i>The field defines the methods and technologies of assessment of students' knowledge, particularly, a list of all types of work that students are required to perform during practical class and the criteria for their assessment. For example, test control, protocol of patient's examination, demonstration of practical skills, etc. Each evaluation method must be described separately.</i> <b>Excellent ("5"):</b> 90-100% answers for format A tests (10 MCQs, single best answer of 5 given answers) are correct; correct clear, complete and logical answers for the questions about the current topic, including questions and tasks for individual work. Presence of qualitative and complete home task. A student closely links theory to practice and correctly demonstrates practical skills; able to solve clinical cases of increased complexity and to summarize the material. A student correctly conducts physical examination of thematic patient, has the necessary communication skills, and uses the principles of medical deontology. <b>Good ("4"):</b> 70-89% answers for format A tests are correct; clear and right answers for the questions about the current topic, including questions and tasks for individual work. There is a qualitative home task. A student correctly demonstrates practical skills or makes non-significant mistakes; able to solve typical clinical cases and cases of moderate complexity. A student correctly conducts physical examination of thematic patient, has the necessary practical skills, and makes no fatal mistakes during diagnosis and treatment. A student may communicate with patients and colleagues, using the principles of medical deontology. <b>Satisfactory ("3"):</b> 60-69% answers for format A tests are correct. Homework is incomplete or contains mistakes. Inadequate or incomplete answers for the questions about the current topic and individual work. A student cannot build a clear, logical answer; makes significant mistakes when answering and demonstrating practical skills; solves only easy typical clinical cases, has a minimum of necessary practical skills; performs examination and plan treatments with errors that do not threaten the patient's life; has a minimum of communication skills, uses the principles of medical deontology. <b>Unsatisfactory ("2"):</b> less than 60% answers for format A tests are correct. The home task is written very bad or is absent. A student does not know the material of the current topic, cannot answer independently and logically to additional questions, does not understand the content of the material; makes significant mistakes when answering and demonstrating practical skills; conducts examination and plan treatment with fatal consequences for a patient; has insufficient communication or verbal skills; insufficiently uses the principles of medical deontology.
Training code	
P-1-25, IWS-1-25	

**11. The form of final control of study success**

<b>General rating system</b>	Participation in the work during the semester 100% on a 200-point scale
<b>Rating scales</b>	Traditional 4-point scale, multi-point (200-point) scale, ECTS rating scale
<b>Admission criteria for final control</b>	Attendance of all practical classes and implementation of all kinds of mandatory activity during the year with a minimum rating 72 points, maximum 120 points



Type of final control	Methods of final control	Passing criteria
Examination	The examination in the discipline "Internal Medicine" includes: Ten MCQs (single best answer of 5 given answers), each correct answer values 1 point Clinical case No1 with 5 open questions for a topic studied during the 5 <sup>th</sup> year; the answer for each question is rated 0-3-4-5 points Clinical case No2 with 5 open questions for a topic studied during the 4 <sup>th</sup> year; the answer for each question is rated 0-3-4-5 points Two electrocardiograms described according to the algorithm with the formation of conclusion; each description is evaluated 0-6-8-10 points	Minimum rating for the exam is 50 points (level below is a criterion of failure that is not added to the year rating); Maximum rating 80 points

### 12. The scheme of calculation and distribution of points received by students

Assessment is one of the final stages of educational activity and determination of educational success. Total rating for the discipline is a sum of rating for 2 semesters (table below on the left) and rating for the exam (described above).

Scale (T = traditional, 200 = 200-point scale)							
T	200	T	200	T	200	T	200
5	120	4.45	107	3.91	94	3.37	81
4.95	119	4.41	106	3.87	93	3.33	80
4.91	118	4.37	105	3.83	92	3.29	79
4.87	117	4.33	104	3.79	91	3.25	78
4.83	116	4.29	103	3.74	90	3.2	77
4.79	115	4.25	102	3.7	89	3.16	76
4.75	114	4.2	101	3.66	88	3.12	75
4.7	113	4.16	100	3.62	87	3.08	74
4.66	112	4.12	99	3.58	86	3.04	73
4.62	111	4.08	98	3.54	85	3	72
4.58	110	4.04	97	3.49	84	Less than 3	not enough
4.54	109	3.99	96	3.45	83		
4.5	108	3.95	95	3.41	82		

Discipline scores for students who successfully completed the programme are converted into a traditional 4-point scale:	
A multi-point (200) scale scoring	A 4-point scale scoring
170-200 points	"5"
140-169 points	"4"
139 -120 points	"3"
Below 120 points	"2"

The points of students studying in one specialty are ranked into the ECTS scale	
ECTS assessment	Statistical parameter
"A"	Best 10 % of students
"B"	Next 25 % of students
"C"	Next 30 % students
"D"	Next 25 % students
"E"	The remaining 10% of students

Points for the discipline are independently converted to both the ECTS scale and the 4-point scale. The points of the ECTS scale are not converted into a 4-point scale and vice versa.

### 13. Material, technical and methodological support of the discipline

- Work programme and syllabus of the discipline.
- Plans for practical classes and individual student's work.
- Recommendations and guides for learning the course of internal medicine for students and teachers.
- Tasks for independent work
- Questions, tests (MCQs) and clinical cases for current control
- Algorithms for treatment and emergency care according to the standards of evidence-based medicine
- Algorithms for performing skills practices and medical manipulations
- Results of laboratory tests; electrocardiograms, radiographs, lung function test results, etc.
- Models, mannequins, multimedia equipment, presentations for training.

### 14. Recommended literature

- eMPendium – electronic compendium "Internal diseases" in open access [Electronic resource]. Access mode: <https://empendium.com/mcmtextbook/>.
- Davidson's Principles and Practice of Medicine 23rd Edition. Editors: Stuart Ralston, Ian Penman, Mark Strachan Richard Hobson. Elsevier. - 2018. - 1440 p.
- USMLE Step 2 CK Lecture Notes 2017: Internal Medicine (Kaplan Test Prep). - 2016. - Published by Kaplan Medical. - 474 p.
- Kasper, Dennis L., Anthony S. Fauci, Stephen L. Hauser, Dan L. Longo, J. Larry Jameson, and Joseph Loscalzo. Harrison's Principles of Internal Medicine. 19th edition. New York: McGraw Hill Education, 2015.
- Goldberger's clinical electrocardiography: a simplified approach / Ary L. Goldberger, Zachary D. Goldberger, Alexei Shvilkin. – 8<sup>th</sup> ed. Elsevier Saunders 2013, Philadelphia, - 231 p.
- Reactive arthritis before and after the onset of the COVID-19 pandemic. / Bekarysova, D., Yessirkepov, M., Zimba, O. et al. // Clin Rheumatol. – 2022. – Vol. 41. – P. 1641-1652. <https://doi.org/10.1007/s10067-022-06120-3>
- Highly cited papers in Takayasu arteritis on Web of Science and Scopus: cross-sectional analysis. / Misra D, Agarwal V, Gasparyan A, Zimba O, Sharma A. // Clin Rheumatol. – 2022. – Vol. 41(1). – P. 129-135. <https://doi:10.1007/s10067-021-05901-6>.
- Mechanisms of thrombosis in ANCA-associated vasculitis. / Misra DP, Thomas KN, Gasparyan AY, Zimba O. // Clin Rheumatol. – 2021. – Vol. 40(12). – P. 4807-4815. <https://doi:10.1007/s10067-021-05790-9>
- Challenges in diagnosis of limited granulomatosis with polyangiitis. / Zimba O, Doskaliuk B, Yatsyshyn R, et al. // Rheumatol Int. – 2021. – Vol. 41(7). – P. 1337-1345. <https://doi:10.1007/s00296-021-04858-8>.
- COVID-19 and the clinical course of rheumatic manifestations. / Ahmed S, Zimba O, Gasparyan AY. // Clin Rheumatol. – 2021. – Vol. 40(7). – P. 2611-2619. <https://doi:10.1007/s10067-021-05691-x>

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### 15. Information resources

Website: <https://new.meduniv.lviv.ua/kafedry/kafedra-vnutrishnoyi-medytsyny-2/>

Phone of the Department: 0322601490

E-mail: [kaf\\_internalmed\\_2@meduniv.lviv.ua](mailto:kaf_internalmed_2@meduniv.lviv.ua)

The tutor of the student scientific circle: Professor Yeugen Dzis

#### **Websites related to Internal Medicine:**

<http://www.ers-education.org/guidelines.aspx>

<http://www.esmo.org/Guidelines/Haematological-Malignancies>

<https://ehaweb.org/organization/committees/swg-unit/scientific-working-groups/structureand-guidelines/>

<https://www.aasld.org/>

[www.ginasthma.org](http://www.ginasthma.org)

<http://www.gastro.org/guidelines>

<https://www.diabetes.org/>

<http://goldcopd.org>

<http://www.oxfordmedicaleducation.com/>

<http://www.eagen.org/>

<https://www.nice.org.uk>

<https://www.ueg.eu/guidelines/>