



The Department of Internal Medicine No2
The syllabus for the discipline «Internal medicine»

1. General information	
Faculty	Medical
Educational program (branch, specialty, level of higher education, form of training)	22 "HEALTH CARE", 222 medicine, the second (Magister) level of higher education, full-time education
Academic year	2023-2024
The name of discipline, code (e-mail address on the website of Danylo Halytsky Lviv National Medical University)	Internal medicine OC 25.1. https://new.meduniv.lviv.ua/kafedry/kafedra-vnutrishnoyi-medytsyny-2/
Department (name, address, phone number, E-mail)	The Department of Internal medicine No 2 1, Uzhhorodska Street, Lviv kaf_internalmed_2@meduniv.lviv.ua
The Head of the department (contact E-mail address)	Associate Professor Komarytsya O.Y. komar_or@ukr.net
Year of study (the year of study the discipline)	Fifth
Semester (the semesters of study the discipline)	IX- X
Type of discipline (mandatory / optional)	Mandatory
Teachers (names, surnames, scientific degrees and titles of teachers who teach the discipline, contact E-mail address)	Olga Korolyuk, MD, PhD, Associate Professor, olga_korolyuk@ukr.net Oksana Slaba, MD, PhD, Assistant Professor; Olena Radchenko, Doctor of Medical Science, Professor, olradchenko@gmail.com
Erasmus yes/no (availability of discipline for students within the program Erasmus+)	Yes
Person responsible for the syllabus (person, to whom comments about the syllabus may be addressed, contact E-mail)	Associate Professor Komarytsya O.Y. komar_or@ukr.net Professor Radchenko O.M. olradchenko@gmail.com
Number of ECTS credits	7.5
Number of hours (lectures / practical classes / individual work of students)	14/100/110
Language of teaching	Ukrainian, English
Information about consultations	Individual or group according to student's request
Address, telephone, work regulations of the clinical base, office... (if necessary)	Clinical base Non-profit Municipal Enterprise "The 1st City Clinical Hospital named after Prince Lev" 1, Uzhhorodska Street, Lviv, 79019, Phone number 260-09-13

2. Short summary to the course

The program of “Internal medicine” for the 5th 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.

3. The purpose and objectives of the course

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 5th 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.

4. Prerequisites of the course

The information about disciplines, basic knowledge and learning outcomes necessary for (enrolled) students for successful study and mastering of competencies in this discipline.

Basic disciplines: human anatomy, histology, cytology and embryology, medical biology, medical and biological physics, bioorganic and biological chemistry, pathomorphology, physiology, pathophysiology, microbiology, virology and immunology, pharmacology, clinical pharmacology, radiology and radiation medicine, propaedeutic of internal medicine.

1. Anatomical features of the cardiovascular and pulmonary systems, small and large circulatory system, the structure of the vascular wall, nephron, kidneys, urinary tract, adrenal glands and other endocrine glands; features of blood supply to the heart; myocardial innervation; structure of sympathetic and parasympathetic nervous systems; the leading system of the heart. Anatomical structure of the human skeleton, joints, articular surface, synovial membrane. Location and projection of the heart, cardiac valves. Topography of vessels, nerves, bones, muscles, and joints. Location of the kidneys, ureters, bladder relative to other organs of the abdominal cavity. Histological structure of the heart (pericardium, myocardium, endocardium), arterial and venous walls. Juxtaglomerular apparatus of the kidneys, histological structure of endocrine glands. Morphological structure of connective tissue. Histological structure of bone, periosteum, cartilage, synovial membrane.
2. Mechanisms of blood pressure regulation. Phases of the cardiac cycle. Mechanisms of formation, types of tones, heart murmurs. Functions of the sympathetic and parasympathetic nervous systems. Functions of the respiratory system, heart and its conduction system, arteries and veins. Features of the blood coagulation system. Physiological features of connective tissue. Function of joints, physiological age features of structure of bones and joints. Secretory, excretory functions of the kidneys, mechanism of formation of primary and secondary urine, mechanisms of urination. CBC and urinalysis in healthy individuals and in patients with cardiovascular, rheumatic and renal diseases. Diagnostic value of blood biochemistry, reference ranges of most commonly used biochemical parameters and their reference ranges in adults of different age. Calculation of glomerular filtration rate
3. The structure of atherosclerotic plaque; morphological substrate of atherosclerosis. Macroscopic and microscopic changes in the case of acute coronary artery occlusion of atherosclerotic origin. Atherosclerotic changes in coronary arteries, ischemic changes in the myocardium. Pathological and anatomical features of pulmonary embolism, acute and chronic pulmonary heart. Cellular changes in cardiac valves due to infection and changes in pericardium due to inflammatory processes of various aetiology. Cellular changes in the myocardium due to inflammatory processes. Myocardial morphology in case of organic damage of the heart. Morphological changes in connective tissue due to specific and nonspecific inflammation. Anomalies of bone formation. Pathological and anatomical features of gout. Pathological features of ankylosing spondylitis and reactive arthritis. Pathological features of renal amyloidosis and glomerulonephritis. Pathological features of pyelonephritis, tubulointerstitial nephritis. Pathological changes of the kidneys in the case of primary glomerular lesions. Mechanisms of hypertension and hypotension, functional disorders of the nervous system and endocrine system. The main causes of endothelial damage; risk factors for atherosclerosis; cholesterol theory of atherosclerosis. The mechanism of ischemic and necrotic changes in the myocardium. Mechanisms of dysfunction of the myocardium, coronary vessels and conduction system of the heart. The mechanism of hemodynamic disorders in the case of infectious endocarditis. The mechanism of hemodynamic disorders in case of myocarditis and pericarditis. Impaired conduction of the heart. Mechanisms of acute and chronic heart failure. Mechanisms of coagulation disorders. Mechanisms of autoimmune diseases. Causes and mechanisms of connective tissue dysfunction. Lesions of the musculoskeletal system due to genetic defects, as well as the negative impact of environmental and intrinsic factors. Causes and pathologic mechanisms in osteoarthritis. Causes and pathologic mechanisms in gout. Causes and pathologic mechanisms in rheumatoid arthritis and reactive arthritis. Pathological and

anatomical features of renal amyloidosis and glomerulonephritis. Causes and mechanisms of kidney disease, disorders of water-electrolyte balance, protein and lipid metabolism. Causes and pathogenic mechanisms of chronic kidney disease, and acute kidney injury.

4. Features, varieties of bacterial and viral pathogens. Taking of material, procedure, and diagnostic value of blood culture, urine culture and microbial count, synovial fluid culture, pleural fluid culture.
5. Types of immunological reactions. Methods for determining indicators of humoral and cellular immunity. Immunological methods for the diagnosis of rheumatic diseases.
6. Semiotics of arterial hypertension. Semiotics of atherosclerosis. Semiotics of acute coronary syndrome and myocardial infarction. Signs and symptoms of chronic coronary heart disease, pulmonary embolism, acute, subacute and chronic pulmonary heart, acute and chronic heart failure. Semiotics of acquired valve diseases and congenital heart defects. Signs and symptoms of acute rheumatic fever, infectious endocarditis, myocarditis, cardiomyopathies, and pericarditis. Method of electrocardiography, ECG recoding and interpretation. Semiotics cardiac arrhythmias and blocks. Symptoms and signs SLE and other systemic connective tissue diseases, systemic vasculitis. Methods of examination of joints. Symptoms and signs of rheumatoid arthritis, reactive arthritis, osteoarthritis, gout, and ankylosing spondylitis. Symptoms of kidney disease, methods of laboratory and instrumental diagnosis. Symptoms and syndromes that occur in patients with CKD and acute kidney injury.
7. Radiographic and ultrasound examination of the heart, vessels, joints, and kidneys
8. Mechanisms of action, indications, contraindications, adverse effects, pharmacokinetic and pharmacodynamics properties of the main classes of medications that are used for the treatment of cardiovascular, rheumatic and renal diseases: antihypertensive and antianginal drugs (diuretics, mineralocorticoid receptor antagonisms, ACE inhibitors, angiotensin II receptor blockers, beta-blockers, calcium channel blockers, short-acting and long-acting nitrates, vasodilators); analgesics, sedative agents; thrombolytic agents, anticoagulants, antiplatelet agents; lipid-lowering agents; anti-arrhythmic agents, atropine; antibacterial, antiviral, antifungal agents; nonsteroidal anti-inflammatory drugs, corticosteroids, cytostatic agents, disease-modifying antirheumatic agents (DMARDs), chondroprotectors, uric acid lowering agents, uroseptic agents.

5. Program learning outcomes

The list of learning outcomes

Learning outcome code	The content of the learning outcome	Reference to 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

1	2	3
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

6. The format and the scope of the course

The format of the course (full-time or distance learning)	Full-time	
Type of training sessions	Number of hours	Number of groups
lectures (L)	14	5
practical classes (P)	100	5
seminars	-	-
individual work of students (IWS)	110	5

7. Topics and content of the course

Study code	Topic	Learning content	Learning outcome code	Teachers
L-1	Arterial hypertension: the main principles of diagnosis, treatment and prevention.	Kn-1-5	PLO-1-5	Associate professor O. Korolyuk
L-2	Atherosclerosis, chronic forms of coronary artery disease: the main principles of diagnosis, treatment and prevention.	Kn-1-5	PLO-1-5	Associate professor O. Korolyuk
L-3	Acute coronary syndrome: the main principles of diagnosis, treatment and prevention.	Kn-1-5	PLO-1-5	Associate professor O. Korolyuk
L-4	Myocarditis and cardiomyopathies: the main principles of diagnosis, treatment and prevention.	Kn-1-5	PLO-1-5	Associate professor O. Korolyuk
L-5	Heart failure: the main principles of diagnosis, treatment and prevention.	Kn-1-5	PLO-1-5	Associate professor O. Korolyuk
L-6	Systemic connective tissue disorders: the main principles of diagnosis, treatment and prevention.	Kn-1-5	PLO-1-5	Associate professor O. Korolyuk
L-7	Acute and chronic glomerulonephritis, chronic kidney disease, and chronic renal failure: the main principles of diagnosis, treatment and prevention	Kn-1-5	PLO-1-5	Associate professor O. Korolyuk
P-1	Essential arterial hypertension: the main principles of diagnosis, treatment and prevention.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-1-15	According to the schedule
P-2	Secondary arterial hypertension: the main principles of diagnosis, treatment and prevention.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-1-15	According to the schedule
P-3	Atherosclerosis and chronic forms of coronary artery disease: the main principles of diagnosis, treatment and prevention.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-1-15	According to the schedule
P-4	Acute coronary syndrome: the main principles of diagnosis, treatment and prevention. The role of statins in cardiovascular risk reduction.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-1-15	According to the schedule
P-5	Acute myocardial infarction: the main principles of diagnosis, treatment and prevention.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-1-15	According to the schedule
P-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).	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-1-15	According to the schedule

P-7	Infective endocarditis: the main principles of diagnosis, treatment and prevention.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-1-15	According to the schedule
P-8	Acute rheumatic fever: the main principles of diagnosis, treatment and prevention.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-1-15	According to the schedule
P-9	Congenital heart defects, acquired valve diseases: the main principles of diagnosis, treatment and prevention.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-1-15	According to the schedule
P-10	Cardiomyopathies: the main principles of diagnosis, treatment and prevention.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-1-15	According to the schedule
P-11	Myocarditis and pericarditis: the main principles of diagnosis, treatment and prevention.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-1-15	According to the schedule
P-12	Cardiac arrhythmias: the main principles of diagnosis.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-1-15	According to the schedule
P-13	Heart blocks: the main principles of diagnosis.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-1-15	According to the schedule
P-14	Modern principles of treatment and prevention of cardiac rhythm and conduction disorders.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-1-15	According to the schedule
P-15	Acute heart failure: the main principles of diagnosis, treatment and prevention.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-1-15	According to the schedule
P-16	Chronic heart failure: the main principles of diagnosis, treatment and prevention.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-1-15	According to the schedule
P-17	Systemic lupus erythematosus: the main principles of diagnosis, treatment and prevention.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-1-15	According to the schedule
P-18	Systemic sclerosis, dermatomyositis: the main principles of diagnosis, treatment and prevention.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-1-15	According to the schedule
P-19	Systemic vasculitis: the main principles of diagnosis, treatment and prevention.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-1-15	According to the schedule
P-20	Osteoarthritis and gout: the main principles of diagnosis, treatment and prevention.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-1-15	According to the schedule
P-21	Rheumatoid arthritis: the main principles of diagnosis, treatment and prevention.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-1-15	According to the schedule
P-22	Ankylosing spondylitis and reactive arthritis: the main principles of diagnosis, treatment and prevention.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-1-15	According to the schedule
P-23	Acute kidney injury and pyelonephritis: the main principles of diagnosis, treatment and prevention.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-1-15	According to the schedule
P-24	Glomerulonephritis, tubulointerstitial nephritis, and chronic kidney disease: the main principles of diagnosis, treatment and prevention.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-1-15	According to the schedule
P-25	Chronic renal failure, kidney amyloidosis: the main principles of diagnosis, treatment and prevention.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-1-15	According to the schedule
IWS-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 considering their advantages and disadvantages in particular clinical case.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-2,3,11	According to the schedule
IWS-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.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-2,3,11	According to the schedule
IWS-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.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-2,3,11	According to the schedule
IWS-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	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-2,3,11	According to the schedule

	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.			
IWS-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.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-2,3,11	According to the schedule
IWS-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).	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-2,3,11	According to the schedule
IWS-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).	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-2,3,11	According to the schedule
IWS-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).	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-2,3,11	According to the schedule
IWS-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.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-2,3,11	According to the schedule
IWS-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).	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-2,3,11	According to the schedule
IWS-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).	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-2,3,11	According to the schedule
IWS-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.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-2,3,11	According to the schedule
IWS-13	Preparation for the practical class “Heart blocks: the main principles of diagnosis.” Mastering the skills of interpreting the results of ECG.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-2,3,11	According to the schedule
IWS-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.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-2,3,11	According to the schedule
IWS-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.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-2,3,11	According to the schedule
IWS-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)	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-2,3,11	According to the schedule
IWS-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.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-2,3,11	According to the schedule
IWS-18	Preparation for the practical class “Systemic sclerosis and dermatomyositis: the main principles of diagnosis, treatment and	Kn-1-5, Sk-1-3, C-1-5,	PLO-2,3,11	According to the schedule

	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.	AR-1-3		
IWS-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.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-2,3,11	According to the schedule
IWS-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.).	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-2,3,11	According to the schedule
IWS-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).	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-2,3,11	According to the schedule
IWS-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).	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-2,3,11	According to the schedule
IWS-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.	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-2,3,11	According to the schedule
IWS-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).	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-2,3,11	According to the schedule
IWS-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)	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-2,3,11	According to the schedule
IWS-26	Writing of medical record	Kn-1-5, Sk-1-3, C-1-5, AR-1-3	PLO-1-15	According to the schedule

It is necessary to present the system of organization of classes, the use of interactive methods, educational technologies used for the transfer and acquisition of knowledge, skills and abilities.

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.

8. Verification of learning outcomes

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	<p><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></p> <p>Excellent ("5"): 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.</p> <p>Good ("4"): 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.</p> <p>Satisfactory ("3"): 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.</p> <p>Unsatisfactory ("2"): 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</p>

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.

The form of final control of study success

General rating system	<i>Participation in the work during the semester 100% on a 200-point scale</i>	
Rating scales	Traditional 4-point scale, multi-point (200-point) scale, ECTS rating scale	
Admission criteria for final control	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 th 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 th 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

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

9. Course policy

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).

10. Literature

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11. Equipment, logistics and software equipment of the discipline / course

1. Working curriculum 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 tutors, and for individual work of students (Recommendations and guides for writing of patient's medical record during the course of Internal Medicine).
4. Tests (MCQs) and clinical cases for practical classes.
5. Models, mannequins.
6. Multimedia equipment, presentations for training.
7. A training simulation centre and high-tech simulation classes are used to practice practical skills.

12. Additional information

For other information important for students that is not included into the standard description, for

example, contact details of the person responsible for the educational process at the department, information about the scientific circle of the department, information about routes, information about the need to equip themselves with occupational safety; information about the place of classes; please link to the university website and page of the department: https://new.meduniv.lviv.ua/kafedry/kafedra-vnutrishnoyi-medytsyny-2/kaf_internalmed_2@meduniv.lviv.ua
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