

**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

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“ 30 ” 09 2023

**WORK PROGRAMME OF THE EDUCATIONAL DISCIPLINE  
"PRACTICE IN SIMULATION MEDICINE: INTERNAL MEDICINE"  
INDIVIDUAL PROFESSIONAL COURSE "OBSTETRICS AND  
GYNECOLOGY"**

**ББ 2.11.**

**6 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

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

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## INTRODUCTION

The program of the discipline "Practice in simulation medicine: Internal medicine" of the individual profile course "Obstetrics and gynecology" is compiled in accordance with the educational and professional program (OPP) of training specialists of the second (master's) level of higher education fields of knowledge 22 "Health care" specialty 222 "Medicine"

### **Description of the academic discipline (abstract)**

According to the Curriculum, the discipline "Practice in Simulation Medicine: Internal Medicine" is taught in the 6th year. The educational process is organized according to the European credit transfer system for the organization of the educational process (ECTS).

The program on "Stimulation Medicine Practice" in the 6th year involves studying the basics of simulation medicine in internal medicine, while the emphasis is on learning and improving practical skills that involve clinical and physical examination of the patient, identification of the main symptoms and syndromes, clinical and diagnostic interpretation of indicators standard and additional laboratory-instrumental studies in normal and pathological conditions, carrying out differential diagnosis according to syndromic and nosological principles, determining the tactics of emergency medical care in case of emergency conditions, principles of treatment, planning a prevention strategy and determining the prognosis, as well as performing medical manipulations.

Approximate duration of practical classes - 7.0 hours. The main goal of this course is for the student to study the basics of internal medicine. Students participate in the diagnostic and treatment process of interactive patients under the guidance of the department's teachers. Mastering/acquainting with the procedures most often used in the practice of internal medicine is also provided. The types of classes according to the curriculum are: a) practical classes, b) independent work of students.

Thematic plans of practical classes and independent work reveal problematic issues of the relevant sections of internal medicine.

Practical classes are held at the Danylo Halytskyi Simulation Center of LNMU. The method of organizing practical classes requires the following:

- make the student a participant in the process of providing medical care to interactive patients;
- master professional practical skills; skills of working in a team of students, doctors, other participants in the process of providing medical care;
- to form in the student, as in the future specialist, an understanding of responsibility for the level of his training, its improvement during training and professional activity.

To implement the corresponding module specified in the first lesson, it is necessary to provide the student with a detailed plan of work in the clinic and ensure the conditions for its implementation. This plan should include: - studies that the student should learn (or get acquainted with);

- algorithms (protocols) of examinations, diagnosis, treatment, prevention in accordance with the standards of evidence-based medicine;
- curation of interactive patients, which must be carried out by the student during the study of the discipline;
- cardiopulmonary resuscitation.

Curation of an interactive patient involves:

- 1) clarifying the patient's complaints, medical history and life history, conducting a survey of organs and systems;
- 2) conducting a physical examination of the patient and determining the main symptoms/syndromes of the disease;
- 3) analysis of laboratory and instrumental research results;
- 4) establishing a diagnosis;
- 5) appointment of treatment;
- 6) determination of primary and secondary prevention measures;
- 7) report on the results of the examination of the patient by a team of students in the study group, analysis under the guidance of the teacher of the correctness of establishing the diagnosis, differential diagnosis, prescribed examination, treatment tactics, assessment of prognosis and work capacity, prevention.

It is recommended to conduct practical classes including:

- 1) control of the initial level of knowledge with the help of test questions composed in the format of a question with 5 answer options, of which 1 is correct, and checking workbooks;
- 2) management of 1-2 interactive patients with diseases and conditions corresponding to the topic of the lesson, followed by a discussion of the correctness of establishing a diagnosis, differential diagnosis and treatment measures using the principles of evidence-based medicine and in accordance with National and European guidelines and protocols;
- 3) consideration of the results of additional research methods (laboratory and instrumental), which are used during diagnosis and differential diagnosis, the consideration of which is provided for by the topic of the practical session;
- 4) performing manipulations on simulators;
- 5) control of the final level of knowledge on test tasks.

The independent and individual work of students is an integral part of educational activities and is included in ECTS credits of each module and discipline as a whole. It includes:

- preparation for practical classes;

- acquisition of practical skills;
- preparation for the final control;
- writing a workbook on the subject of the lesson.

The teachers of the department provide the opportunity to carry out independent work. During practical classes and final control, control and evaluation of its implementation is carried out.

The Department of Internal Medicine has the right to make changes to the curriculum up to 15.0%.

Mastering the topic (current control) is monitored in a practical session. It is recommended to use the following means of assessing the level of students' training: test tasks, solving situational problems, conducting laboratory studies and evaluating their results, analyzing and evaluating the results of instrumental studies and parameters characterizing the functions of the human body, monitoring the acquisition of practical skills and medical manipulations on stimulants and interactive scoreboards.

The final control is made at the last practical session by the teacher of the department in accordance with the schedule approved at the educational and methodical meeting of the department. The evaluation of the student's knowledge in the discipline is a rating and is presented on a multi-point scale, taking into account the evaluations of the mastery of individual modules.

For those students who want to improve their grade in a discipline, after completing the study of the discipline, the curriculum provides for a retake period.

The structure of the educational discipline	Number of credits, hours	Classroombased			Yr	Type of control
	Total	Lectures (hrs)	Practical studies (hrs)	Ind. Stud.		
<b>Discipline</b> "Practice in Simulation Medicine: Internal Medicine"	<b>3.0 credits /ECTS 90 hrs.</b>	<b>0</b>	<b>35</b>	<b>55</b>	<b>VI course</b>	<b>credit</b>

**The subject of study** of the educational discipline is etiopathogenesis, diagnosis, treatment, prevention and emergency care in case of diseases that occur in the clinic of internal medicine.

**Interdisciplinary links:** based on students' study of human anatomy, medical biology, histology, cytology and embryology, pathomorphology, physiology, pathophysiology, microbiology, virology and immunology, pharmacology, clinical pharmacology and clinical pharmacy, radiology and radiation medicine, propaedeutics of internal medicine.

**Interdisciplinary links:**

Discipline	Know
Normal anatomy	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 heart blood supply; myocardial innervation; structure of sympathetic and parasympathetic nervous systems; the leading system of the heart. Anatomical structure of the digestive system (esophagus, stomach, duodenum, colon and small intestine, liver and biliary tract, pancreas), its blood supply, innervation, function. Anatomical structure of the human skeleton, joints, joint surface, synovial membrane. Anatomical features of hematopoietic organs and vascular structure of different calibers. Anatomical structure of the lymphatic system.
Topographic anatomy	Location and projection of the heart, valvular apparatus of the heart. Topography of vessels and nerves. Topography of the respiratory system (mutual location of bronchi, lungs, pulmonary vessels, pleura) Topography of the digestive system (mutual location of the organs of the gastroduodenal zone, hepato-duodenal zone (liver, gallbladder), small and large intestines) Topography of bones, muscles and joints. Location of the kidneys, ureters, bladder relative to other organs of the abdominal cavity.
Pathological anatomy	The structure of fibrous plaque; morphological substrate of atherosclerosis. Macroscopic and microscopic changes in the case of acute coronary artery occlusion of atherosclerotic origin. Atherosclerotic changes of coronary arteries, ischemic changes in the myocardium. Pathological and anatomical features of pulmonary embolism and pulmonary heart disease. Cellular changes of heart valves of infectious origin and changes of pericardium in case of inflammatory processes of various etiology. Cellular changes of the myocardium in the case of inflammatory processes. Myocardial morphology in the case of different types of heart block, depending on the organic damage to the heart. Changes in the structure of the wall of bronchopulmonary tissue in the case of bronchial

	<p>asthma, pneumonia, pleurisy, changes in the lung parenchyma in case of pulmonary insufficiency.</p> <p>Inflammatory and anatomical changes of the mucous membrane of the esophagus and stomach (superficial, diffuse antral, interstitial, hypersecretory, type B, type A, diffuse changes in the body of the stomach associated with pernicious anemia, reactive reflux gastritis, type C, peptic ulcers); morphological changes in the case of irritable bowel syndrome, Crohn's disease, nonspecific ulcerative colitis; mechanism of symptoms of acute and chronic cholecystitis, gallbladder dyskinesias, gallstone disease; anatomical changes that can cause liver cirrhosis and pathogenetic mechanisms of various liver cirrhosis syndromes; mechanism of symptoms of chronic pancreatitis and pancreatic cancer.</p> <p>Anatomical changes in the diencephalon, endocrine glands, internal organs.</p> <p>Pathological and anatomical features</p> <p>congenital anemia, acute leukemia and chronic leukemia, lymphoma.</p> <p>Morphological changes of connective tissue in the case of specific and nonspecific inflammation.</p> <p>Anomalies of bone formation.</p> <p>Pathological and anatomical features of gout.</p> <p>Pathological and anatomical features of ankylosing spondylitis and reactive arthritis.</p> <p>Pathological and anatomical features of renal amyloidosis and glomerulonephritis.</p> <p>Pathological and anatomical features of pyelonephritis, tubulointerstitial nephritis.</p> <p>Pathological and anatomical changes of the kidneys in the case of primary glomerular lesions.</p>
Histology	<p>Histological structure of the heart (pericardium, myocardium, endocardium), arterial and venous walls.</p> <p>The structure of the wall of the trachea, bronchi, alveoli in normal and pathology.</p> <p>Cellular structure of CO of the esophagus, stomach and duodenum, small and large intestines, walls of the gallbladder and bile ducts, microscopic structure of the liver and histological changes in normal and in case of pathology, morphological signs of CP and pancreatic cancer.</p> <p>Juxta-glomerular apparatus of the kidneys, histological structure of the endocrine glands.</p> <p>Morphological structure of connective tissue.</p> <p>Histological structure of bone, periosteum, cartilage, synovial membrane.</p> <p>Morphological features of erythrocytes, reticulocytes; microscopic structure of lymph nodes, lymphopoiesis; hemogram, myelocytogram normal and in the presence of leukemia; histological features of hematopoietic organs and vascular structure of different calibers.</p>
Normal physiology	<p>Mechanisms of blood pressure regulation.</p> <p>Functions of the sympathetic and parasympathetic nervous systems.</p> <p>Functions of the heart and its conduction system, arteries and veins.</p> <p>Basic methods of respiratory function control; physiological drainage; indicators of the function of external respiration, their value; functional state of gas exchange in the lungs.</p> <p>The main mechanisms that provide antireflux protection; functions of the stomach, duodenum, small and large intestines are normal; functions of the gallbladder, biliary tract, normal bilirubin metabolism and in the case of mechanical jaundice; features of blood supply, innervation of the liver, its functional activity; main endocrine and exocrine functions of the software.</p> <p>Functions of the pituitary gland, adrenal cortex, gonads.</p> <p>Physiological features of connective tissue.</p> <p>Function of joints, physiological age features of structure of bones and joints.</p> <p>Kidney function. The mechanism of formation of primary and secondary urine.</p> <p>Regulation of hematopoiesis, features of coagulant and anticoagulant system are normal.</p>
Pathological physiology	<p>Pressor and depressor mechanisms.</p> <p>The main causes of endothelial damage; risk factors for atherosclerosis; cholesterol theory of atherosclerosis; functional disorders of the nervous system.</p> <p>The mechanism of ischemic and necrotic changes in the myocardium.</p> <p>Mechanisms of dysfunction of the myocardium, coronary vessels and conduction system of the heart.</p> <p>Features of coagulant and anticoagulant system in case of pathology.</p> <p>Mechanisms and causes of pulmonary embolism.</p> <p>The mechanism of hemodynamic disorders in the case of infectious endocarditis.</p> <p>The mechanism of hemodynamic disorders in the case of pericarditis.</p> <p>Impaired cardiac conduction.</p> <p>Mechanisms of acute and chronic heart failure.</p> <p>Causes and mechanisms of bronchial patency disorders of the bronchopulmonary system; mechanisms of lung abscess, lung gangrene and bronchiectasis and RF; types of hypoxia, mechanisms of their occurrence, main causes and pathogenesis of RF; indicators of</p>

	<p>pneumotachometry, spirometry, peak flowmetry depending on the type and stage of ventilation failure.</p> <p>The main pathological factors of GERD; causes and mechanism of dysfunction of the stomach, small and large intestines, gallbladder of the biliary tract; features of pathogenesis of hepatitis, LC; dysfunction of endo- and exocrine functions of the pancreatic gland.</p> <p>Mechanisms of violation of the central regulation of metabolism, in particular fat, hydrocarbon, violation of intermediate metabolism.</p> <p>Mechanisms of autoimmune diseases.</p> <p>Causes and mechanisms of connective tissue dysfunction.</p> <p>Lesions of the musculoskeletal system due to genetic defects, as well as the negative impact of external and internal factors.</p> <p>Causes, mechanism of osteoarthritis.</p> <p>Causes, mechanism of gout.</p> <p>Causes, mechanism of arthritis and arthropathy.</p> <p>Pathological and anatomical features of renal amyloidosis and glomerulonephritis.</p> <p>Causes and mechanisms of kidney disease, disorders of water-electrolyte balance, protein and lipid metabolism.</p> <p>Causes and mechanisms of pathogenesis of kidney disease, leading to chronic kidney disease and acute kidney damage.</p>
Microbiology	<p>Characteristic of pathogens that are etiological factors of infectious endocarditis, pneumonia, pleurisy, peptic ulcer disease. Normal composition of the microflora of the small intestine and its changes according to different age groups; determination of intestinal dysbacteriosis; main pathogens of colon diseases</p>
Biochemistry	<p>Metabolism and function in the body of folic acid, vitamin B12, iron; clinical assessment of changes in biochemical parameters of blood in hemorrhagic diseases.</p> <p>Methods of clinical and laboratory research of blood oxygen balance.</p> <p>Structure and biosynthesis of the main metabolic processes occurring in the colon.</p>
Clinical immunology and allergology	<p>Types of immunological reactions. Methods for determining indicators of humoral and cellular immunity. Immunological methods for the diagnosis of connective tissue diseases.</p>
Propaedeutics of internal diseases	<p>Semiotics of Secondary AH.</p> <p>Semiotics of atherosclerosis and neurocirculatory dystonia. Symptoms of asthenic, tachycardia, cardiac, hypertensive, autonomic vascular syndromes.</p> <p>Semiotics of acute coronary syndrome and myocardial infarction.</p> <p>Symptoms of chronic forms of coronary heart disease.</p> <p>Symptoms of pulmonary embolism, acute, subacute and chronic drugs.</p> <p>Semiotics of acquired and congenital heart defects.</p> <p>Symptoms of infectious endocarditis.</p> <p>Semiotics of myocarditis, cardiomyopathies.</p> <p>Semiotics of pericarditis.</p> <p>Principles of operation of the electrocardiograph. Methods of electrocardiography and ECG decoding. Semiotics of arrhythmias.</p> <p>Clinical symptoms of heart block. Interpretation of changes in case of conduction disorders.</p> <p>Symptoms of acute and chronic heart failure.</p> <p>Examination of patients with shortness of breath (collection of complaints, medical history and life, objective examination of the respiratory and cardiovascular systems, analysis of the results of additional methods of examination); identification of the main symptoms and syndromes of bronchial obstruction, asthma, pneumonia, pleurisy and their complications; RF, stages, clinical features.</p> <p>The main symptoms of GERD, dyspepsia, chronic gastritis, clinical signs of gastric and duodenal peptic ulcer, complications of these diseases; clinical signs of celiac disease; examination of patients with lesions of the colon and small intestine; coprological research; detection of symptoms of cholecystitis, cholangitis, dyskinesias of the biliary tract by hypo-, hyper- and mixed type; physical examination of the liver and interpretation of basic studies of liver function; clinical symptoms of obesity</p> <p>Symptoms of rheumatism and SLE.</p> <p>Symptoms of systemic connective tissue diseases.</p> <p>Symptoms of systemic vasculitis.</p> <p>Methods of examination of joints, symptoms of rheumatoid arthritis.</p> <p>Symptoms of osteoarthritis.</p> <p>Symptoms and semiotics of gout.</p> <p>Symptoms that occur in the case of kidney disease, methods of laboratory and instrumental diagnosis.</p> <p>Symptoms and syndromes that occur in the case of CKD, acute kidney damage.</p>

	Characteristic complaints, clinical syndromes in case of diseases of the hematopoietic system; ability to collect anamnesis, identify special complaints, conduct clinical examinations of patients with diseases of the hematopoietic system; laboratory methods for assessing hematopoiesis in normal and in the presence of leukemia.
Oncology	Examination of a patient with hematocological diseases; diagnosis of paraneoplastic reactions. Barrett's esophagus, cancerous and precancerous changes of the esophagus; clinical signs of gastric cancer, malignant and benign neoplasms of the colon, small intestine, benign and malignant tumors of the biliary system, cancerous and precancerous changes in the liver.
Roentgenology	Radiological changes in the case of asthma, pneumonia, pleurisy. Radiological signs of esophageal motor dysfunction, GERD, ulcers, esophageal strictures, diaphragmatic esophageal hernias, tumors, shortening and abnormalities of the esophagus, gastritis and PU of the stomach and duodenum, gastric tumors, chronic enteritis, gluten enteropathy. Whipple disease, IBS and IBD, visualization of the pancreatic gland (ultrasound, CT, MRI, angiography, scanning). Radiological stages of rheumatoid arthritis. X-ray signs of osteoarthritis. X-ray features of gouty joint damage. X-ray signs of ankylosing spondylitis and reactive arthritis. Radiological changes in the case of myeloma disease.
Surgery	Clinical signs of complications of GERD, bleeding, perforation, penetration of the duodenum and duodenum, intestinal obstruction, peritonitis, surgical complications of celiac disease and enteropathy; the share of housing and communal services in the structure of surgical diseases; connection of housing and communal services with other surgical diseases; clinical signs of complications of chronic hepatitis
Pharmacology	.Classification and mechanism of action of thrombolytics, narcotic analgesics, anticoagulants and antiplatelets, nitrates, $\alpha$ -adrenoblockers, lipid-lowering drugs, ACE inhibitors, diuretics, calcium antagonists, cardiotropic, sedative drugs. Classification of antiarrhythmic drugs, mechanism of action. Groups and mechanisms of action of drugs that improve cardiac conduction. Antibacterial, antiviral, antifungal drugs, classification, mechanism of action, indications, contraindications, possible complications. Mechanism of action, indications for use and side effects of expectorants and bronchodilators. Antisecretory drugs (anticholinergic drugs, H <sub>2</sub> -histamine receptor blockers, proton pump blockers, gastrin receptor antagonists, antacids); gastrocytoprotectors (mucus stimulators, those that form a protective film, enveloping and astringent drugs); Drugs that affect the motor function of the stomach and duodenum. Groups of drugs that are prescribed to correct intestinal dysbacteriosis and normalize digestive processes. Mechanism of action, indications and contraindications of the main drugs used for the treatment of IBS, IBD. Antispasmodics, cholagogues, anti-inflammatory, analgesics, mechanisms of their action. Hepatoprotectors, enterosorbents, amino acids, bile acids, the mechanism of their action. Mechanism of action, indications and contraindications to the use of basic drugs in the treatment of CP. Groups and mechanism of action of drugs for the treatment of obesity. Groups of drugs for the treatment of acute rheumatic fever and SLE, mechanisms of their action. Classification, mechanism of action, grounds and warnings for use, complications from the use of NSAIDs, glucocorticoids, cytostatics, aminoquinoline drugs, chondroprotectors, anti-gout drugs. Classification and mechanism of action of drugs used for the treatment of CKD and acute kidney disease. Pharmacological features of drugs used in the treatment of various forms of anemia, leukemia, hemorrhagic diseases.
Social medicine and health care organization	The structure of providing health care to the population for the proper use of resources of the health care system for prevention and treatment
Spa treatment	Resorts for the treatment of chronic diseases of the gastrointestinal tract, rheumatic diseases and diseases of the bronchopulmonary system

## 1. The purpose and tasks of the educational discipline

**1.1. The purpose** of teaching the individual profile course "Practice of simulation medicine" in the 6th year is the formation of the ability to apply the acquired knowledge, abilities, skills and understanding to solve typical tasks of a doctor in the field of health care, the scope of which is provided by the specified lists of syndromes and symptoms of urgent diseases conditions and diseases that require special patient management tactics; laboratory and instrumental research, medical manipulations.

**1.2. The main tasks of studying** the discipline "Practice of simulation medicine" in the 6th year are:

- conduct a survey and clinical examination of patients with the main diseases of the cardiovascular, respiratory, digestive, urinary, bone and joint systems, hematological diseases and analyze their results;
- determine the etiological and pathogenetic factors of the most common diseases in the clinic of internal medicine;
- analyze typical clinical signs, identify clinical variants and complications of the most common diseases in the clinic of internal medicine;
- establish a preliminary diagnosis of the most common diseases in the clinic of internal medicine;
- prescribe laboratory and instrumental examination of patients with the most common diseases in the clinic of internal medicine and their complications;
- on the basis of evaluating the results of laboratory and instrumental examination, carry out a differential diagnosis, substantiate and establish a clinical diagnosis of the most common diseases in the clinic of internal medicine;
- determine the principles and nature of treatment during the treatment of the most common diseases in the clinic of internal medicine;
- prescribe treatment, including prognosis-modifying treatment, of the most common diseases in the clinic of internal medicine and their complications;
- determine the tactics of providing emergency medical care based on the diagnosis of an emergency;
- provide emergency medical care based on the diagnosis of an emergency;
- carry out primary and secondary prevention of the most common diseases in the clinic of internal medicine;
- evaluate the prognosis and working capacity of patients with the most common diseases in the clinic of internal medicine;
- perform medical manipulations;
- keep medical documentation;
- comply with the requirements of ethics, bioethics and deontology in their professional activities.

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

According to the requirements of the PP, the discipline provides students with the acquisition of competencies:

- *integral*:

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

- *general*:

- GC1. Ability to abstract thinking, analysis and synthesis.
- GC2. Ability to learn and master modern knowledge.
- GC3. Ability to apply knowledge in practical situations.
- GC4. Knowledge and understanding of the subject area and understanding of professional activity.
- GC5. Ability to adapt and act in a new situation.
- GC6. Ability to make informed decisions.
- GC7. Ability to work in a team.
- GC8. Interpersonal skills.
- GC9. Ability to communicate in the state language both orally and in writing.
- GC 11. Skills in the use of information and communication technologies.
- GC 12. Definiteness and perseverance in terms of tasks and responsibilities.
- GC 13. Awareness of equal opportunities and gender issues.
- GC 14. The ability to realize one's rights and responsibilities as a member of society, to 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.

GC 15. The ability to preserve and multiply the moral, cultural, scientific values and achievements 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.

- *special (professional, subject)*:

- PC1. Ability to collect medical information of the patient and analyze clinical data.
- PC2. The ability to determine the necessary list of laboratory and instrumental studies and evaluate their results.
- PC 3. The ability to establish a preliminary and clinical diagnosis of the disease.
- PC 4. The ability to determine the necessary regime of work and rest in the treatment and prevention of diseases.



PC 5. The ability to determine the characteristics of nutrition in the treatment and prevention of diseases.

PC 6. Ability to determine the principles and nature of treatment and prevention of diseases.

PC 7. Ability to diagnose urgent conditions.

PC 8. Ability to determine the tactics of providing emergency medical aid.

PC 9. Ability to carry out medical evacuation measures.

PC 10. Ability to perform medical manipulations.

PC 11. The ability to solve medical problems in unfamiliar environments in the presence of incomplete or limited information, taking into account aspects of social and ethical responsibility.

PC 16. The ability to provide medical documentation, including the use of electronic forms.

PC 21. It is clear and unambiguous to convey one's own knowledge, conclusions and arguments about health care problems and related issues to specialists and non-specialists, in particular to people who are studying.

PC 24. Adherence to ethical principles when working with patients and laboratory animals.

PC 25. Adherence to professional and academic integrity, bear responsibility for the reliability of the obtained scientific results

### "Competence Matrix".

№	Classification of competencies by NQF	Knowledge	Skills	Communication	Autonomy and responsibility
1	2	3	4	5	6
<b>Integral competencies</b>					
Ability to solve typical and complex specialized and practical problems in a professional health care activity, or in a learning process that involves research and / or innovation and is characterized by the complexity and uncertainty of conditions and requirements					
<b>General competencies</b>					
1	Ability to abstract thinking, analysis and synthesis.	Know the methods of analysis, synthesis and further modern learning.	Be able to analyze information, make informed decisions, be able to acquire modern knowledge.	Establish appropriate connections to achieve goals.	Be responsible for the timely acquisition of modern knowledge.
2	Ability to learn and master modern knowledge.	Know the current trends in the industry and analyze them.	Be able to analyze professional information, make informed decisions, acquire modern knowledge.	Establish appropriate connections to achieve goals.	Be responsible for the timely acquisition of modern knowledge.
3	Ability to apply knowledge in practical situations.	Have specialized conceptual knowledge acquired in the learning process.	Be able to solve complex problems and problems that arise in professional activities..	Clear and unambiguous communication of their own conclusions, knowledge and explanations that substantiate them to specialists and non-specialists.	Responsible for making decisions in difficult conditions.
4	Knowledge and understanding of the subject area and understanding of professional activity.	Have a profound knowledge of the structure of professional activity.	Be able to carry out professional activities that require updating and integration of knowledge.	Ability to effectively form a communication strategy in professional activities.	Be responsible for professional development, ability to further professional training with a high level of autonomy.
5	Ability to adapt and act in a new situation. Know the types and methods of adaptation, principles of action in a new situation.		Be able to apply means of self-regulation, to be able to adapt to new situations (circumstances) of life and activity.	Establish appropriate connections to achieve results.	Be responsible for the timely use of self-regulatory methods.
6	Ability to make an informed decision.	Know the tactics and strategies of	Be able to make informed decisions,	Use communication strategies and	Be responsible for the choice and



		communication, laws and ways of communicative behavior.	choose ways and strategies communication to ensure effective teamwork.	interpersonal skills..	tactics of communication
7	Ability to work in a team.	Know the tactics and strategies of communication, laws and ways of communicative behavior	. Be able to choose ways and strategies of communication to ensure effective teamwork.	Use communication strategies	Be responsible for the choice and tactics of communication.
8	Interpersonal skills.	Know the laws and methods of interpersonal interaction.	Be able to choose ways and strategies of communication for interpersonal interaction.	Use interpersonal skills.	Be responsible for the choice and tactics of communication.
10	Skills in the use of information and communication technologies.	Have deep knowledge in the field of information and communication technologies used in professional activities.	Be able to use information and communication technologies in the professional field, which requires updating and integration of knowledge	Use information and communication technologies in professional activities.	. Be responsible for the development of professional knowledge and skills.
11	The ability to search, process and analyze information from various sources.	To know the places of search, methods of processing and analysis of information from various sources.	To be able to determine the priority areas of search, processing and analysis of information from various sources.	To use interpersonal interaction. different sources	To be responsible for a qualitative search, processing and analysis of information from various sources
12	Definiteness and perseverance in terms of tasks and responsibilities.	Know the responsibilities and ways to accomplish the tasks.	Be able to set goals and objectives to be persistent and conscientious in the performance of duties.	Establish interpersonal relationships to effectively perform tasks and responsibilities..	Responsible for the quality of the tasks
13	Awareness of equal opportunities and gender issues	Know and be aware of issues of equal opportunities and gender issues	Be able to evaluate rights and responsibilities regarding equal opportunities and gender issues	Establish interpersonal interaction based on equal opportunities and exclude gender issues	Be responsible for establishing equal opportunities and eliminating gender issues problems
14	The ability to realize one's rights and responsibilities as a member of society, to be aware of the values of civil society (free democratic) and the need for its sustainable development, the rule of law, the rights and freedoms of a person and a citizen of Ukraine.	To know one's social and public rights and responsibilities, to be aware of the values of civil society (free democratic) and the need for its sustainable development, the rule of law, the rights and freedoms of a person and a citizen of Ukraine.	To form one's civic consciousness, to be able to act in accordance with it. To be able to apply the values of civil society (free democratic) for its sustainable development, the rule of law, the rights and freedoms of a person and a citizen of Ukraine.	The ability to convey one's civic and social position. To adhere to the values of civil society (free democratic) and the need for its sustainable development, the rule of law, the rights and freedoms of a person and a citizen of Ukraine.	To be responsible for one's civic position and activities for sustainable development, the rule of law, the rights and freedoms of a person and a citizen of Ukraine
15	The ability to preserve and increase the moral, cultural, scientific values and	To know the moral, cultural, scientific values and achievements of	To be able to preserve and multiply the moral, cultural, scientific	To adhere to moral, cultural, scientific values and achievements of	To be responsible for the observance of moral, cultural, scientific values

	achievements 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 in the development of society, technology and technologies, to use various types and forms of motor activity for active recreation and leading a healthy lifestyle.	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 in the development of society, equipment and technologies, to know about different types and forms of motor activity for active recreation and maintaining a healthy lifestyle.	values and achievements 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 in the development of society, technology and technologies, to use various types and forms of motor activity for active recreation and being able to keep a healthy lifestyle.	society based on understanding the history and patterns of development of the subject area, their place in the general system of knowledge about nature and society and in the development of society, equipment and technologies, to adhere to various types and forms of motor activity for active recreation and healthy lifestyle.	and achievements of society on the basis of understanding the history and patterns of development of the subject area, its place in the general system of knowledge about nature and society and in the development of society, technology and technology.
<b>Special (professional, subject) competencies</b>					
1	Ability to collect medical information about the patient and analyze clinical data	Have specialized knowledge about the person, his organs and systems, know the methods and standard schemes of questioning and physical examination of the patient.	Be able to conduct a conversation with the patient on the basis of algorithms and standards, using standard techniques to conduct a physical examination of the patient. Be able to assess the state of human health.	Effectively form a communication strategy when communicating with the patient. Enter information about the state of human health in the relevant medical records.	Be responsible for the quality collection of information obtained through interviews, surveys, examinations, palpation, percussion of organs and systems and for the timely assessment of the state: human health and for taking appropriate measures.
2	Ability to determine the required list of laboratory and instrumental studies and evaluate their results.	Have specialized knowledge about the person, his organs and systems, standard methods of laboratory and instrumental research (according to list 4).	Be able to analyze the results of laboratory and instrumental studies and on their basis to assess information about the patient's diagnosis (according to list 4).	Form and communicate to the patient and specialists the necessary conclusions list of laboratory and instrumental studies (according to list 4).	Be responsible for deciding on the evaluation of laboratory and instrumental research results
3	Ability to establish a preliminary and clinical diagnosis of the disease.	Know the algorithms of disease diagnosis; algorithms for selection of leading symptoms or syndromes (according to list 1); preliminary and clinical diagnoses (according to list 2); methods of laboratory and instrumental examination (according to list 4)	Be able to conduct a physical examination of the patient. Be able to make an informed decision regarding the selection of the leading clinical symptom or syndrome; be able to make a preliminary and clinical diagnosis of the disease (according to list 2); appoint a laboratory and	Based on regulatory documents, maintain the patient's medical documentation (ambulatory/inpatient card, etc.)	Be responsible for making informed decisions and actions regarding the correctness of the established preliminary and clinical diagnosis of diseases

			instrumental examination of the patient (according to list 4) by applying standard methods		
4	Ability to determine the required mode of work and rest in the treatment of diseases.	Have specialized knowledge about man, his organs and systems; ethical and legal norms; algorithms and standard schemes for determining the mode of work and rest during treatment, on the basis of preliminary and clinical diagnosis of the disease (according to list 2).	Be able to determine, on the basis of preliminary and clinical diagnosis, by making an informed decision the necessary mode of work and rest in the treatment of the disease (according to list 2).	Form and inform the patient and specialists about the necessary mode of work and rest in the treatment of the disease (according to list 2).	Be responsible for the validity of the appointment of work and rest in the treatment of the disease (according to list 2).
5	Ability to determine the nature of nutrition in the treatment of diseases.	Have specialized knowledge about man, his organs and systems; algorithms and standard schemes of nutrition in the treatment of diseases (according to list 2).	Be able to determine, on the basis of preliminary and clinical diagnosis, the nature of nutrition in the treatment of diseases (according to list 2).	To form and communicate to the patient, specialists conclusions about nutrition in the treatment of the disease (according to list 2).	Be responsible for the validity of the definition of nutrition in the treatment of the disease (according to list 2).
6	Ability to determine the principles and nature of disease treatment and prevention.	Have specialized knowledge of algorithms and standard schemes of treatment of diseases (according to list 2).	Be able to determine the principles and nature of treatment of the disease (according to list 2).	Form and communicate to the patient and specialists their own conclusions about the principles and nature of treatment (according to list 2).	Be responsible for deciding on the principles and nature of treatment of the disease (according to list 2).
7	Ability to diagnose emergencies.	Have specialized knowledge about the person, his organs and systems, standard methods of human examination (at home, on the street, in a health care facility) in the absence of information.	Be able, in the absence of information, using standard techniques, by making an informed decision to assess the human condition and make a diagnosis (according to list 3).	Under any circumstances, adhering to the relevant ethical and legal norms to make an informed decision on the assessment of the human condition, diagnosis and organization of the necessary medical measures depending on the human condition; fill in the relevant medical documents.	Be responsible for the timeliness and effectiveness of medical measures to diagnose emergencies.
8	Ability to determine the tactics of emergency medical care.	Know the legal framework for the provision of emergency medical care, in particular the law of Ukraine "On emergency medical care".	Have specialized knowledge about urgent human conditions; principles of emergency medical care. Be able to identify emergencies (according to list 3);	Reasonable formulate and convey to the patient or his / her legal representative the need for emergency care and to obtain consent for medical intervention.	Be responsible for the correct determination of the emergency condition, its severity and tactics of emergency medical care.

			principles and tactics of emergency medical care; to carry out organizational and diagnostic measures aimed at saving and saving human life.		
9	Ability to conduct medical evacuation measures	Know the algorithms of medical evacuation measures	Be able to conduct medical evacuation measures	Explain the necessity and procedure of medical evacuation measures	Be responsible for the timeliness and quality of medical evacuation measures
10	Skills to perform medical manipulations.	Have specialized knowledge about man, his organs and systems; knowledge of algorithms for performing medical manipulations (according to list 5).	Be able to perform medical manipulations (according to list 5).	Reasonable form and bring to the patient, specialists conclusions about the need for medical manipulations (according to list 5)	Be responsible for the quality of medical manipulations (according to list 5).
11	Ability to solve medical problems in new or unfamiliar environments in the presence of incomplete or limited information, taking into account aspects of social and ethical responsibility.	Know and navigate medical problems arising in new or unfamiliar environments in the presence of incomplete or limited information.	Have the skills to solve medical problems in new or unfamiliar environments in the presence of incomplete or limited information	Communicate to solve medical problems in new or unfamiliar environments in the presence of incomplete or limited information.	Take responsibility for solving medical problems in new or unfamiliar environments in the presence of incomplete or limited information, taking into account aspects of social and ethical responsibility
16	Ability to maintain medical documentation	Know the system of official document flow in the professional work of a doctor, including modern computer information technologies.	Be able to determine the source and location of the required information depending on its type. Be able to process information and conduct analysis of received information	Receive necessary information from a specified source and, based on its analysis, form appropriate conclusions	Be responsible for the completeness and quality of information analysis and conclusions based on its analysis
21	To convey clear and unambiguous one's own knowledge, conclusions and arguments on health care problems and related issues to specialists and non-specialists, in particular to people who are studying	Know how to clearly and unambiguously convey one's own knowledge, conclusions and arguments on health care problems and related issues to specialists and non-specialists, in particular to people who are studying.	. Possess the methods and skills for clearly and unambiguously conveying one's own knowledge, conclusions and arguments on health care problems and related issues to specialists and non-specialists, in particular to students.	Formulate an opinion on the clear and unambiguous presentation of one's own knowledge, conclusions and arguments on health care problems and related issues to specialists and non-specialists, in particular to students.	Be responsible for the validity of conclusions regarding one's own knowledge, conclusions and arguments on health care problems and related issues to specialists and non-specialists, in particular to persons who are studying
24	Adhere to ethical principles when working with patients, laboratory animals	Know the ethical principles that apply when working with patients	Be able to apply ethical principles when working with patients	Adhere to ethical principles when communicating with patients	Be responsible for observing ethical principles when working with

					patients
25	Adherence to professional and academic integrity, be responsible for the reliability of the obtained results	Have specialized knowledge about the system of professional and academic integrity	Be able to organize one's own work in compliance with professional and academic integrity	Communicate for compliance with professional and academic integrity	

### Learning outcomes:

Integrative final program learning outcomes, the formation of which is facilitated by the educational discipline

- conduct professional activities in social interaction based on humanistic and ethical principles; identify future professional activities as socially significant for human health;
- apply knowledge of general and professional disciplines in professional activities;
- comply with the norms of the sanitary and hygienic regime and safety requirements during professional activities;
- use the results of independent search, analysis and synthesis of information from various sources to solve typical problems of professional activity;
- argue information for decision-making, be responsible for them in standard and non-standard professional situations; adhere to the principles of deontology and ethics in professional activities;
- to carry out professional communication in modern Ukrainian, to use skills of oral communication in a foreign language, analyzing texts of professional orientation and translate foreign language information sources;
- adhere to the norms of communication in professional interaction with colleagues, management, work effectively in a team;
- analyze the information obtained as a result of scientific research, summarize, systematize and use it in professional activities.

### Program learning outcomes (PLO) for discipline

№	Program learning outcomes	Abbreviation	Correspondence to competencies
1.	Have thorough knowledge of the structure of professional activity. To be able to carry out professional activities that require updating and integration of knowledge. To be responsible for professional development, the ability for further professional training with a high level of autonomy.	PLO – 1	GC 1-15; PC 1-25
2.	Understanding and knowledge of fundamental and clinical biomedical sciences, at a level sufficient for solving professional tasks in the field of health care.	PLO – 2	GC 4, 6, 10, 11, 12; PC 1-15, 17, 19, 20,24
3.	Specialized conceptual knowledge that includes scientific achievements in the field of health care and is the basis for conducting research, critical understanding of problems in the field of medicine and related interdisciplinary problems.	PLO – 3	GC 1-3, 6, 7, 9-12; PC 1-3, 11, 18-26
4.	Identify and identify leading clinical symptoms and syndromes (according to list 1); according to standard methods, using preliminary data of the patient's history, data of the patient's examination, knowledge about the person, his organs and systems, establish a preliminary clinical diagnosis of the disease (according to list 2).	PLO – 4	GC 3-4; PC 12, 16, 22, 24
5.	Collect complaints, anamnesis of life and diseases, assess the psychomotor and physical development of the patient, the state of organs and systems of the body, based on the results of laboratory and instrumental studies, evaluate information regarding the diagnosis (according to list 4), taking into account the age of the patient.	PLO – 5	GC 1-3, 6, 7; PC 1-3, 7, 8, 11, 12, 16, 24
6.	To establish the final clinical diagnosis by making a reasoned decision and analyzing the received subjective and objective data of clinical, additional examination, carrying out differential diagnosis, observing the relevant ethical and legal norms, under the control of the head physician in the conditions of the health care institution (according to the list 2)	PLO – 6	GC 1-3, 6-8; PC 1-3, 7, 8, 11, 12, 16, 24
7.	Assign and analyze additional (mandatory and optional) examination methods (laboratory, functional and/or instrumental) (according to list 4) of patients with diseases of organs and body systems for differential diagnosis of diseases (according to list 2).	PLO – 7	GC 8; PC 1-2, 16, 24
8.	To determine the main clinical syndrome or what causes the severity of the victim/victim's condition (according to list 3) by making a reasoned decision and assessing the person's condition under any circumstances (in the conditions	PLO – 8	GC 3-4; PC 5-12, 24

	of a health care facility, outside its borders), including in the conditions of an emergency and hostilities, in field conditions, in conditions of lack of information and limited time.		
9.	Determine the nature and principles of treatment (conservative, operative) of patients with diseases (according to list 2), taking into account the age of the patient, in the conditions of a health care institution, outside its borders and at the stages of medical evacuation, including in field conditions, on the basis of a preliminary clinical diagnosis, observing the relevant ethical and legal norms, by making a reasoned decision according to existing algorithms and standard schemes, in case of the need to expand the standard scheme, be able to justify personalized recommendations under the control of the head physician in the conditions of a medical institution.	PLO – 9	PC 1, 2, 6-8, 10, 12
10.	Determine the necessary mode of work, rest and nutrition based on the final clinical diagnosis, observing the relevant ethical and legal norms, by making a reasoned decision according to existing algorithms and standard schemes.	PLO – 10	GC 4; PC 4, 5, 24
11.	Determine tactics and provide emergency medical care in emergency situations (according to list 3) in limited time conditions according to existing clinical protocols and standards of treatment.	PLO – 14	GC 5, 7, 8; PC 1, 7, 11, 17, 19, 23
12.	Form rational medical routes for patients; to organize interaction with colleagues in their own and other institutions, organizations and institutions; to apply tools for the promotion of medical services in the market, based on the analysis of the needs of the population, in the conditions of the functioning of the health care institution, its division, in a competitive environment.	PLO – 16	PC 3, 7, 10, 11
13.	Perform medical manipulations (according to list 5) in the conditions of a medical institution, at home or at work based on a previous clinical diagnosis and/or indicators of the patient's condition by making a reasoned decision, observing the relevant ethical and legal norms.	PLO – 17	GC 14, 15; PC 7, 11, 17
14.	To determine the state of functioning and limitations of a person's vital activities and the duration of incapacity for work with the preparation of relevant documents, in the conditions of a health care institution, based on data about the disease and its course, peculiarities of a person's professional activity, etc. Maintain medical documentation regarding the patient and the contingent of the population on the basis of regulatory documents.	PLO – 18	PC 13, 14, 17, 20
15.	Plan and implement a system of anti-epidemic and preventive measures regarding the occurrence and spread of diseases among the population.	PLO – 19	PC 14
16.	PLO21. Search for the necessary information in the professional literature and databases of other sources, analyze, evaluate and apply this information.	PLO – 21	GC 2, 9, 10
17.	Apply modern digital technologies, specialized software, and statistical data analysis methods to solve complex healthcare problems.	PLO – 22	GC 5, PC 13-17
18.	To convey clearly and unambiguous one's own knowledge, conclusions and arguments on health care problems and related issues to specialists and non-specialists.	PLO – 25	GC 5, 6, PC 11, 17, 21
19.	Manage work processes in the field of health care, which are complex, unpredictable and require new strategic approaches, organize the work and professional development of personnel taking into account the acquired skills of effective teamwork, leadership positions, appropriate quality, accessibility and fairness, ensuring the provision of integrated medical help	PLO – 26	GC 2, 8
20.	Communicate freely in the national and English languages, both orally and in writing to discuss professional activities, research and projects.	PLO – 27	GC 5-8, 15; PC 11, 18, 21-22
21.	Make effective decisions about health care problems, assess the necessary resources, take into account social, economic and ethical consequences.	PLO – 28	GC 14, 15; PC 14, 20

#### Learning outcomes for the discipline

Learning outcome code	The content of the learning outcome	References to the code of the competence matrix
<b>Category:</b> Kn - knowledge Ab - ability Co– competence AR - autonomy and	Learning outcomes determine that the student must know, understand and be able to perform, after completing the discipline. Learning outcomes follow from the set learning goals. To enroll in the discipline, it is necessary to confirm the achievement of each	Symbol of the Program Learning Outcome (PLO) code in the High

responsibility		Education Standard
Kn-1	Have thorough knowledge of the structure of professional activity.	PLO-1
Ab-1	Able to carry out professional activities that require updating and integration of knowledge.	
Co-1	Skills of further professional training	
AR-1	To bear responsibility for professional development, the ability for further professional training with a high level of autonomy	
Kn-2	. Have knowledge of fundamental and clinical biomedical sciences, equally sufficient for solving professional tasks in the field of health care.	PLO-2
Ab-2	To be able to analyze the problems of fundamental and clinical biomedical sciences	
CO-2	Ability to determine the necessary list of problems of fundamental and clinical biomedical sciences	
AR-2	To be responsible for making a decision regarding the evaluation of tasks of fundamental and clinical biomedical sciences	
Kn-3	Have specialized conceptual knowledge, including scientific achievements in the field of health care and the basis for conducting research	PLO-3
Ab-3	To be able to critically analyze problems in the field of medicine and related interdisciplinary problems.	
CO-3	The ability to analyze problems in the field of medicine and related interdisciplinary problems.	
AR-3	Be responsible for making informed decisions and actions regarding the correctness of coverage of the problem in the field of medicine and interdisciplinary problems related to it.	
Kn-4	Know the leading clinical symptoms and syndromes; standard diagnostic methods.	PLO-4
Ab-4	To be able to distinguish and identify the leading clinical symptoms and syndromes; by standard methods, using the patient's anamnesis data, the patient's examination data, knowledge about the person, his organs and systems.	
CO-4	The ability to establish a preliminary clinical diagnosis of the disease	
AR-4	Be responsible for establishing a preliminary clinical diagnosis of the disease	
Kn-5	Know the algorithms of working with the patient	
Ab-5	. To be able to collect complaints, anamnesis and diseases, evaluate the psychomotor and physical development of the patient, the state of the organs and systems of the body, based on the results of laboratory and instrumental studies, evaluate information related to the diagnosis, taking into account the age of the patient.	PLO-5
CO-5	Ability to evaluate the results of laboratory and instrumental research	
AR-5	Be responsible for the completeness of collected information about the patient.	
Kn-6	Know the principles of establishing a final clinical diagnosis.	
Ab-6	Be able to establish a final clinical diagnosis by making a reasoned decision and analyzing the received subjective and objective data of clinical, additional examination, conducting differential diagnosis, observing the relevant ethical and legal norms, under the supervision of the head physician in the conditions of the health care institution.	PLO-6
CO-6	The ability to establish an algorithm for formulating a final clinical diagnosis	
AR-6	Be responsible for formulating the final clinical diagnosis	
Kn-7	Know the standard methods of conducting laboratory and instrumental research	
Ab-7	Be able to analyze the results of laboratory and instrumental studies and, based on them, evaluate information about the patient's diagnosis	PLO-7
CO-7	Ability to determine the necessary list of laboratory and instrumental studies and evaluate their results	
AR-7	To be responsible for making a decision regarding the evaluation of the results of laboratory and instrumental studies	
Kn-8	To know the main clinical syndromes and the severity of the condition of the victim/injured (under the conditions of the health care institution, outside its boundaries), including in the conditions of emergency situations and combat operations, in field conditions, in conditions of lack of information and limited time.	PLO-8



Ab-8	To be able to determine the main clinical syndrome or the severity of the victim's condition caused by making a reasoned decision and assessing the condition of a person under any circumstances (in the conditions of a health care institution, outside its borders), including in the conditions of emergency situations and combat operations, in field conditions, in conditions of lack of information and limited time.	
CO-8	To have interaction skills, regarding the determination of the main clinical syndrome or the cause of the severity of the victim's/victim's condition, making a reasoned decision and evaluating a person under any circumstances (in terms of a health care institution, outside its boundaries), including in the conditions of emergency situations and combat operations, in field conditions, in conditions of lack of information and limited time.	
AR-8	To be responsible for the timely determination of the main clinical syndrome or the cause of the severity of the victim's/victim's condition by making a reasoned decision and assessing the state of a person under any circumstances (in terms of a health care institution, outside its boundaries), including in the conditions of emergency situations and combat operations, in field conditions, in conditions of lack of information and limited time.	
Kn-9	Know the principles of treatment of patients (conservative, operative) with diseases, taking into account the age of the patient, the conditions of the health care facility, its limits and stages of medical evacuation, including in field conditions.	PLO-9
Ab-9	Be able to determine the nature and principles of treatment of patients (conservative, operative) with diseases, taking into account the age of the patient, the conditions of the health care facility, its limits and the stages of medical evacuation, including in field conditions, on the basis of a preliminary clinical diagnosis, following the relevant ethical and legal norms, by making a reasoned decision according to existing algorithms and standard schemes, and when it is necessary to expand the standard scheme, and to be able to substantiate personalized recommendations under the control of the head physician in the conditions of the medical institution.	
CO-9	The ability to communicate about the nature and principles of treatment of patients (conservative, operative) with diseases, taking into account the age of the patient, the conditions of the health care facility, its limits and the stages of medical evacuation, including in field conditions, on the basis of a preliminary clinical diagnosis, observing the relevant ethical and legal norms, by making a reasoned decision according to existing algorithms and standard schemes	
AR-9	To be responsible for the quality of the prescribed treatment (conservative, operative) of patients with diseases, taking into account the age of the patient, the conditions of the health care facility, its limits and the stage of medical evacuation, including in field conditions	
Kn-10	Know the necessary mode of work, rest and nutrition based on the final clinical diagnosis, existing algorithms and standard schemes.	PLO-10
Ab-10	Be able to determine the necessary regime of work, rest and nutrition on the basis of the final clinical diagnosis, observing the relevant ethical and legal norms, by making a well-founded decision with existing algorithms and standard schemes.	
CO-10	The ability to determine the mode of work, rest and the nature of nutrition during the treatment of diseases	
AR-10	To be responsible for the reasonableness of determining the mode of work, rest and the nature of nutrition during the treatment of diseases	
Kn-11	To know the tactics of providing emergency medical aid in emergency situations in limited time in accordance with existing clinical protocols and treatment standards.	PLO-14
Ab-11	Able to provide emergency medical assistance in emergency situations in limited time in accordance with existing clinical protocols and treatment standards.	
CO-11	The ability to determine the tactics of providing emergency medical aid in emergency situations in limited time in accordance with existing clinical protocols and treatment standards.	
AR-11	To be responsible for the provision of emergency medical aid in emergency situations in a time-limited manner in accordance with existing clinical	

	protocols and treatment standards.	
Kn-12	Know the rational medical routes of patients.	PLO-16
Ab-12	To be able to form rational medical routes for patients.	
CO-12	The ability to communicate with colleagues in order to form rational medical routes for patients	
AR-12	To be responsible for the validity of decisions regarding the formation of rational medical routes for patients	
Kn-13	Know the principles of performing medical manipulations in the conditions of a medical institution, at home or at work	PLO-17
Ab-13	Be able to perform medical manipulations in the conditions of a medical institution, at home or at work based on a previous clinical diagnosis and/or indicators of the patient's condition by making a reasoned decision, observing the relevant ethical and legal norms	
CO-13	Ability to communicate regarding medical manipulations in the conditions of a medical institution, at home or at work	
AR-13	To be responsible for carrying out medical manipulations in the conditions of a medical institution, at home or at work	
Kn-14	To know what limitations of a person's life activity and the duration of incapacity for work require the preparation of relevant documents, in the conditions of a health care institution based on data about the disease and its course, the peculiarities of a person's professional activity, etc.	PLO-18
Ab-14	Be able to determine the state of functioning and limitations of a person's vital activity and the duration of incapacity with the preparation of relevant documents, in the conditions of a health care institution, based on data about the disease and its course, the peculiarities of a person's professional activity, etc.	
CO-14	The ability to assess the limitation of a person's vital activity and the duration of his disability	
AR-14	Be responsible for assessing the limitation of a person's life activity and the duration of his/her incapacity	
Kn-15	Know anti-epidemic and preventive measures for the occurrence and spread of diseases among the population.	
Ab-15	To be able to carry out anti-epidemic and preventive measures regarding the occurrence and spread of diseases among the population.	PLO-19
Ab-16	Be able to find the necessary information in professional literature and databases of other sources, analyze, evaluate and apply this information.	PLO-21
Ab-17	Be able to apply modern digital technologies, specialized software, and statistical methods of data analysis to solve complex healthcare problems.	PLO-22
AR-15	Be responsible for the clear and unambiguous presentation of one's own knowledge, conclusions and arguments on health care problems and related issues to specialists and specialists To	PLO-25
AR-16	be responsible for ensuring the provision of integrated medical care.	PLO-26
Ab-18	Be able to communicate freely in the state language and in English, both orally and in writing to discuss professional activities, research and projects.	PLO-27
CO-15	To comply with the requirements of ethics, bioethics and deontology in their professional activities	PLO-28
AR – 17	To be responsible for compliance with the requirements of ethics, bioethics and deontology in one's professional activity.	

## 2. Information volume "Practice of simulation medicine".

3 ECTS credits (90 hours) are assigned to study "Simulation Medicine Practice: Internal Medicine" in the 6th year.

### 3. The structure of the academic discipline

Topic	Lectures	Practical classes	Independent work
1. Cardiopulmonary resuscitation		7	11
2. Management of a patient with paroxysmal heart rhythm and heart conduction disorders		7	11
3. Management of a patient with acute cardiovascular and respiratory failure		7	11
4. Management of a patient with shocks		7	11
5. Management of a patient with coma		7	11
<b>Total hours 90 / 3 ECTS credits</b>	<b>0</b>	<b>35</b>	<b>55</b>

Form of final control	Credit
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**4. The thematic plan of lectures** according to the order N 881 dated 15.03.2022 "On the implementation of the training plan for applicants of the second (master's) level of higher education in the specialty 222 "Medicine" (Appendix 1) lectures are not provided.

#### 5. Thematic plan of practical classes

№	TOPIC	Number of hours
1.	Cardiopulmonary resuscitation	7
2.	Management of a patient with paroxysmal heart rhythm and heart conduction disorders	7
3.	Management of a patient with acute cardiovascular and respiratory failure	7
4.	Management of a patient with shocks	7
5.	Management of a patient with coma	7
	<b>Total</b>	<b>35</b>

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

№	TOPIC	Number of hours
1.	- Preparation for a practical class on the topic "Cardiopulmonary resuscitation". - Elaboration of clinical protocols and guidelines. - Improvement of interpretation of ECG results	11
2.	- Preparation for a practical lesson on the topic "Management of a patient with heart rhythm and conduction disorders." - Improving the technique of ECG interpretation by topic. - Improvement of interpretation of coagulogram results.	11
3.	- Preparation for a practical lesson on the topic "Management of a patient with acute cardiovascular and respiratory failure." - Improvement of ECG interpretation by topic.	11
4.	- Preparation for a practical class on the topic "Cure of patients with shocks". - Improving the technique of recording and interpreting ECG and Echocardiography by topic.	11
5.	- Preparation for a practical lesson on the topic "Cure of patients with coma". - Improving the interpretation of the results of laboratory research methods (general blood analysis, blood glucose level, glycated hemoglobin, ALT, AST, creatinine, GFR, total bilirubin with fractions, albumin, urea, LDH, electrolytes, coagulogram, ketone bodies in blood and urine, level TSH, T3, T4, ACTH, cortisol, aldosterone, arterial and venous blood gases and indicators of the acid-base state of the blood).	11
	<b>TOTAL</b>	<b>55</b>

**7. Individual tasks** according to order N 881 dated 15.03.2022 "On the implementation of the training plan for applicants of the second (master's) level of higher education in the specialty 222 "Medicine" (Appendix 3) are not provided for

#### 8. Teaching methods:

**Practical, visual, verbal, work with a book, video method.**

During classes, such methods of interactive learning as business games, role-playing games, cases, etc. are used.

#### 9. Control methods:

oral, written, test, programmed, practical control, self-control.

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

**9.2 Form of final control of study success:** credit

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

#### 10. Current control:

Current control is carried out during training sessions and is aimed at checking the students' assimilation of the educational material.

During the practical session, the student examines the patient, analyzes the received data, formulates and substantiates the preliminary diagnosis; prepares a plan for additional research methods, documents the patient's examination in the form of a brief medical history; analyzes the results of additional research methods, compares data from several patients, formulates and substantiates a clinical diagnosis; learns the basic principles of disease treatment in the clinic of internal medicine, solves clinical situational problems, makes a short report on the completed independent work.

Conducting current control during training sessions should be based on test control, solving situational problems, current survey, examination of the patient, filling out the patient card and independent work, after which the student is assigned a comprehensive assessment. The student must receive a grade in each topic.

Forms of assessment of current educational activities should be standardized and include control of theoretical and practical training. The final grade for the current educational activity is given on a 4-point (national) scale

#### Criteria for assessing the practical lesson

- Knowledge of theoretical material has significant errors, no homework, initial test control of knowledge written less than 60%, unsatisfactory examination of the patient (unsatisfactory assessment for practical skills), the main test on the topic written on unsatisfactory assessment, the student makes mistakes that can lead until the death of the patient - **unsatisfactory**;
- Knowledge of theoretical material has errors, which, however, can not cause the death of the patient, the initial test control is written at 60-74%, a satisfactory grade for practical skills, test on the topic written on a satisfactory grade, the student makes mistakes that lead to prolong the diagnostic search, but do not threaten the life of the patient - **satisfactory**;
- Knowledge of theoretical material without errors, corresponds to the program, the initial test control is written on 75-89%, the grade "good" for the performed practical skills, the test on the studied topic is written on the grade "good", the student does not make mistakes - **good**.
- Knowledge of theoretical material without errors, corresponds to the program, from basic disciplines excellent knowledge which the student can use in therapy, initial test control is written on 90% and more, an estimation "excellent" for the executed practical skills, control work on the studied subject is written on an estimation "Excellent", the student does not make mistakes, is able to examine the patient, interpret the results of examinations and prescribe modern, individual, with a dosage of treatment - **excellent**.

Final control		
General evaluation 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	
Conditions of admission to the final control	The student attended all practical classes and received at least 120 points for current performance	
Type of final control	Methods of final control	Enrollment criteria
Credit	All topics submitted for current control must be included. Grades from the 4-point scale are converted into points on a multi-point (200-point) scale in accordance with the Regulation "Criteria, rules and procedures for evaluating the results of students' learning activities"	The maximum number of points is 200. The minimum number of points is 120.
Other types of control	See "Simulation Medicine Practice Diary"	

#### 12. Scheme of accrual and distribution of points received by students

Assessment is one of the final stages of learning activities and determining learning success.

The calculation of points is based on the grades obtained by the student on the traditional scale during the study of the discipline during the semester, by calculating the arithmetic mean (AM), rounded to two decimal places. The resulting value is converted into points on a multi-point scale as follows:

$$200/5 \cdot x = CA$$

For convenience, the table of recalculation on a 200-point scale is given:

Recalculation of the average grade for current activities in a multi-point scale for disciplines that end with a credit

4-point scale	200-point scale	4-point scale	200-point scale	4-point scale	200-point scale	4-point scale	200-point scale
5	200	4.45	178	3.92	157	3.37	135
4.97	199	4.42	177	3.89	156	3.35	134
4.95	198	4.4	176	3.87	155	3.32	133
4.92	197	4.37	175	3.84	154	3.3	132
4.9	196	4.35	174	3.82	153	3.27	131
4.87	195	4.32	173	3.79	152	3.25	130
4.85	194	4.3	172	3.77	151	3.22	129
4.82	193	4.27	171	3.74	150	3.2	128
4.8	192	4.24	170	3.72	149	3.17	127
4.77	191	4.22	169	3.7	148	3.15	126
4.75	190	4.19	168	3.67	147	3.12	125
4.72	189	4.17	167	3.65	146	3.1	124
4.7	188	4.14	166	3.62	145	3.07	123
4.67	187	4.12	165	3.57	143	3.02	121

4.65	186
4.62	185
4.6	184
4.57	183
4.52	181
4.5	180
4.47	179

4.09	164
4.07	163
4.04	162
4.02	161
3.99	160
3.97	159
3.94	158

3.55	142
3.52	141
3.5	140
3.47	139
3.45	138
3.42	137
3.4	136

3	120
Less 3	not enough

Scores from the discipline are independently converted into both the ECTS scale and the 4-point scale. ECTS scale scores are not converted to a 4-point scale and vice versa.

The scores of students studying in one specialty, taking into account the number of scores scored in the discipline, are ranked on the ECTS scale as follows:

ECTS assessment	Statistical indicator
"A"	The best 10% of students
"B"	The next 25% of students
"C"	The next 30% of students
"D"	The next 25% of students
"E"	The last 10% of students

Discipline scores for students who have successfully completed the program are converted into a traditional 4-point scale according to the absolute criteria, which are given in the table below:

Score on a multi-point (200) scale	Score on a four-point scale
From 170 to 200 points	«5»
From 140 to 169 points	«4»
From 139 to the minimum number of points that must be scored by student	«3»
Below the minimum number of points 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. Methodical support

Educational content:

- 1) plans for practical classes
- 2) tasks for independent work
- 3) guidelines / recommendations for students and teachers
- 4) algorithms for treatment and emergency care (according to the standards of evidence-based medicine)
- 5) algorithms for performing skills practices, medical manipulations, videos
- 6) results of laboratory and instrumental research methods
- 7) models, phantoms, etc.
- 8) simulators, electronic directories, computers with appropriate information support
- 9) questions, tasks, tasks or cases for current and final control.

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5. Davidson's Principles and Practice of Medicine 23rd Edition. Editors: Stuart Ralston, Ian Penman, Mark Strachan Richard Hobson. Elsevier. - 2018. - 1440 p.
6. Diaper Norma. Emergency Scenario Training Guidance Document Version 4.0 West Wing Southampton General Hospital Southampton – 2017. 132 p.

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9. Harrison's Principles of Internal Medicine, Twentieth Edition (Vol.1 & Vol.2) 21th Edition. 2021; J Jameson, A. Fauci, D. Kasper, S. Hauser, D. Longo, J. Loscalzo.
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11. Gilles Chiniara. Clinical Simulation: Education, Operations and Engineering, Elsevier Inc. 2019. 453 p. Levine A., DeMaria S., Schwartz A., Sim A. The Comprehensive Textbook of Healthcare Simulation. 2015. – Springer. 376 p.
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13. Trof R, Beishuizen A., Cornet A.Volume-limited versus pressure-limited hemodynamic management in septic and nonseptic shock. Crit Care Med. 2013. P. 1177-85.
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#### **Information resources**

- <https://www.aasld.org/>
- <https://www.diabetes.org>
- <http://www.eagen.org/>
- <http://www.ers-education.org/guidelines.aspx>
- <http://www.esmo.org/Guidelines/Haematological-Malignancies>
- <https://ehaweb.org/organization/committees/swg-unit/scientific-working-groups/structure-and-guidelines/>
- <http://www.gastro.org/guidelines>
- [www.ginasthma.org](http://www.ginasthma.org)

**Danylo Halytsky Lviv National Medical University**  
**Department: Internal Medicine № 1**  
**Department: Internal Medicine № 2**

***DIARY***

**PRACTICE IN SIMULATION MEDICINE:  
INTERNAL MEDICINE"**

**For students 6 years of studying INDIVIDUAL PROFESSIONAL COURSE "OBSTETRICS AND  
GYNECOLOGY"**

**Field of Knowledge 22 "Health care"  
specialties 222 "Medicine"**

The first and the second name of a student \_\_\_\_\_  
 Faculty \_\_\_\_\_ Course \_\_\_\_\_ Group \_\_\_\_\_

is undergoing the medical simulating practice (internal medicine) at the base \_\_\_\_\_ Danylo Halytsky Lviv National  
 Medical University

\_\_\_\_\_ (the name of the hospital)  
 The terms of the practice: since \_\_\_\_\_. \_\_\_\_\_ till \_\_\_\_\_. \_\_\_\_\_ 2022.

Head of the Medical Practice from the  
 Department \_\_\_\_\_  
 (position, name and surname, signature)

Student arrived " \_\_\_\_ " \_\_\_\_\_ 2022\_ . left " \_\_\_\_ " \_\_\_\_\_ 2022 \_\_\_\_ .

Signature of the responsible person \_\_\_\_\_

Stamp



## TERMS

**Practice in simulating medicine (internal medicine) is carried out in accordance with the training plan for doctors and the practice program for the 6th year.**

Students work for 7 academic hours daily, in their spare time they do independent work. Teachers of specialized departments are the direct supervisors of students' practice.

Before leaving for the internship, the student must receive the instruction of the internship manager from the department, the internship diary.

During the internship, the student must strictly follow the rules of the internal procedure of the Simulation Center of LNMU.

**The purpose** of practical training in simulating medicine (internal medicine) is to achieve the main final goals defined in the educational and professional training program of a specialist and is the basis for building the content of practice.

### **The ultimate goals of medical practice:**

Consolidation of knowledge and practical skills obtained during the study of basic clinical and theoretical disciplines and their further deepening and improvement during work in medical and preventive institutions, as well as consolidation of this knowledge and skills in the conditions of a simulation center.

### **Specific goals of simulating practice:**

- perform cardiopulmonary resuscitation
- plan a scheme of care that will probably require cardiopulmonary resuscitation
- analyze the results of laboratory and instrumental research methods after performing cardiopulmonary resuscitation
- determine the causes of paroxysmal rhythm and conduction disturbances
- analyze the ECG in patients with paroxysmal rhythm and conduction disorders
- know the principles of providing emergency care during the occurrence of paroxysmal rhythm and/or conduction disturbances
- determine the leading pathological symptoms and syndromes in patients with shocks and comas of various genesis, acute cardiovascular and respiratory failure
- carry out differential diagnosis and make a preliminary diagnosis in patients with rhythm and conduction disorders, in patients with shocks and comas of various genesis, acute cardiovascular and respiratory failure
- interpret the general principles of treatment, rehabilitation and prevention in patients with rhythm and conduction disorders, in patients with shocks and comas of various genesis, acute cardiovascular and respiratory failure
- participate in the provision of emergency aid in case of urgent conditions
- perform necessary medical manipulations

## TRAINEESHIP PLAN

№	Topic and content	Hrs
1.	Cardiopulmonary resuscitation	7
2.	Paroxysmal disorders of heart rhythm and conduction	7
3.	Cardiovascular and respiratory failure	7
4.	Shocks	7
5.	Commas	7
6.	Total	35

## PRACTICE CONTENTS

**The list of practical skills** that a student of the 6th year of the Faculty of Medicine should master during simulating medical practice in the therapeutic department of a hospital:

№	The list of skills and abilities
1.	Determining the need for and carrying out cardiopulmonary resuscitation
2.	Diagnosis and assistance during the occurrence of paroxysmal heart rhythm and conduction disorders
3.	Diagnosis and assistance to a patient with cardiovascular and respiratory failure
4.	Diagnosis and assistance to a patient with shock
5.	Diagnosis and assistance to a patient with coma

### **Criteria for evaluation of practical skills:**

- fulfillment of practical skills **without errors - 24 points**,
- fulfillment of practical skills with individual failings, **corrected by a student - 4 points**
- fulfillment of practical skills **failings corrected by lecturer - 3 points**
- **failed practical skills - 0 points.**

Note. For the skill of cardiopulmonary resuscitation - 12 points.

### EVALUATION OF THE STUDENT'S WORK IN PRACTICE

N	The list of skills and abilities	Date	Evaluation of enrollment in points	Signature
1	Determining the need for and carrying out cardiopulmonary resuscitation			
2	Diagnosis and assistance during the occurrence of paroxysmal heart rhythm and conduction disturbances			
3	Diagnosis and assistance to a patient with cardiovascular and respiratory failure			
4	Diagnosis and assistance to a patient with shock			
5	Diagnosis and assistance to a patient with coma			
6	The sum of points for performing practical skills			

### PRACTICE FINAL CONTROL

Students who have obtained at least 72 points for the practical skills in the practice of simulation medicine (internal medicine) are admitted to the final control of medical practice. According to the requirements of the internship program, students pass the final exam on the last day of internship with LNMU teachers.

### THE QUESTIONS FOR THE STUDENTS TO PREPARE TO FINAL CONTROL

1. Performing cardiopulmonary resuscitation
2. Schemes of providing assistance to the main categories of patients in need of cardiopulmonary resuscitation
3. Evaluation of the results of laboratory and instrumental research methods after cardiopulmonary resuscitation
4. Determination of the causes of paroxysmal rhythm disturbances
5. Determination of the causes of paroxysmal conduction disorders
6. ECG analysis in patients with paroxysmal rhythm disorders
7. ECG analysis in patients with paroxysmal conduction disturbances
8. Principles of providing emergency care during the occurrence of paroxysmal rhythm disturbances
9. Principles of providing emergency aid during the occurrence of paroxysmal conduction disorders
10. Determination of the main pathological symptoms and syndromes in patients with shocks and comas of various genesis, acute cardiovascular and respiratory failure
11. Differential diagnosis in patients with rhythm and conduction disorders, in patients with shocks and comas of various genesis, acute cardiovascular and respiratory failure
12. Principles of treatment, rehabilitation and prevention in patients with rhythm and conduction disorders, in patients with shocks and comas of various genesis, acute cardiovascular and respiratory failure
13. Principles of providing emergency aid in case of urgent conditions
14. Performing necessary medical manipulations.

#### Evaluation criteria final control of the practice:

The final control includes practical skills and evaluation of data from laboratory and instrumental examination methods.

0 points – the student makes significant mistakes when answering and performing practical skills;

10 points - the student has mastered the theoretical material, has satisfactory practical training, but mistakes are made in performing manipulations, interpreting the results of additional research methods;

15 points (12 points \*) – the student has mastered the theoretical material, knows how to examine the patient methodically and correctly, perform diagnostic and therapeutic manipulations, but certain inaccuracies in the answer and performance of practical skills are assumed;

20 points (15 points \*) – the student has mastered the theoretical material perfectly, methodically correctly examines the patient, performs diagnostic and therapeutic manipulations.

\* – for evaluating laboratory-instrumental methods of examination and providing assistance and/or performing medical manipulations.

The maximum number of points that a student can receive for the final control is 80 points, the minimum number of points is 50.

<b>№</b>	<b>Task</b>	<b>Date</b>	<b>Evaluation of enrollment in points</b>	<b>Signature of the teacher</b>
1.	Cardiopulmonary resuscitation			
2.	Results of laboratory-instrumental examinations No. 2			
3.	Providing assistance <i>to the</i> patient and/or performing medical manipulations No. 2			
<b>Total</b>				

#### EVALUATION OF PRACTICE

<b>Total points for:</b>		<b>Total points</b>	<b>Traditional mark</b>	<b>Date</b>	<b>Signature of the teacher</b>
<b>Implementation of the practical skills</b>	<b>Final control</b>				

The Head of the practice from the Department

\_\_\_\_\_  
(signature)

\_\_\_\_\_  
(surname and initials)