

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

Petro Mohyla Black Sea National University

Medical Institute

Department of Surgical Disciplines

"APPROVED"

first vice-rector

Ishchenko M.M.

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**CURRICULUM OF THE TRAINING DISCIPLINE**

**SURGERY**

Specialty 222 "Medicine"

Developer

Head of the Department

Guarantor of Educational Program

Director of the Institute

Head of TDD

Nedieliiev O.I.

Zack M.U

Klymenko M.O.

Hryshchenko H.V.

Shkirchak S.I.

## 1. Description of training discipline

| Name of the indicator   | discipline profile                    |                 |
|---|---------------------------------------|-----------------|
| Name of discipline  | Surgery                               |                 |
| field of expertise  | 22 "Health".                          |                 |
| specialty   | 222 "Medicine"                        |                 |
| Specialization (if any)   |                                       |                 |
| education programme   | Surgery                               |                 |
| Level of higher education   | Master                                |                 |
| discipline status   | Normative                             |                 |
| training course   | Year 4                                |                 |
| school year   | 2021/2022                             |                 |
| Semester numbers:   | Daytime Form                          | extramural form |
|   | 7th, 8th.                             | -               |
| Total number of ECTS credits / hour   | 4.5 credits (2 / 2.5) / 135 hours     |                 |
| Course Structure:<br>– lectures<br>– practical exercises<br>– hours of students' independent work | Daytime Form                          | extramural form |
|   | 10 (6/4) hours                        |                 |
|   | 70 (36/34) hours                      |                 |
|   | 55 (28/27) hours                      |                 |
| Percentage of class workload  | 59%; independent work of students 41% |                 |
| Language of instruction   | English                               |                 |
| Form of intermediate control (if any)   | Attestation for the 7th semester      |                 |
| Form of final control   | Exam - 8th semester                   |                 |

## 2. Purpose, objectives and results of the discipline

The general purpose of teaching of educational discipline "Surgery" is the assimilation of theoretical and practical knowledge of etiology, pathogenesis, typical and atypical clinical manifestations, methods of diagnostics, conservative and operative treatment, rehabilitation of surgical diseases of abdominal cavity organs in the limits corresponding to preparation of the general doctor taking into account features of his specialty.

**Learning objectives:** acquisition of competence, knowledge, skills and abilities by the student to carry out professional activities on the specialty:

- Know the main etiological and pathogenetic factors of the most common surgical diseases of the abdominal cavity.
- Know the classifications and typical clinical presentation of the most common surgical diseases of the abdominal cavity.
- Be able to identify the most common clinical symptoms and syndromes in the clinic of surgical diseases of the abdominal cavity.
- Be able to make a plan of examination and analyze the results of laboratory and instrumental examinations in the typical course of the most common surgical diseases of the abdominal cavity.
- Be able to interpret the general principles of treatment, rehabilitation and prevention of the most common surgical diseases of the abdominal cavity.
- Know the moral and deontological principles of the medical specialist and the principles of professional subordination in abdominal surgery.
- To be able to determine the tactics of management (principles of surgical interventions and conservative treatment, rehabilitation measures) for the most common surgical diseases of the abdominal cavity and their complications.
- Be able to perform necessary medical manipulations in surgical diseases of the abdominal cavity.
- Be able to diagnose and treat emergency conditions in abdominal surgery.
- Be able to perform prognosis of life and disability in the most common surgical diseases of the abdominal cavity.

### **Prerequisites for the study of the discipline (mijdisciplanarni liaison).**

The discipline "Surgery" is based on the knowledge acquired by students in the study of such fundamental disciplines as anatomy, histology, physiology, pathological anatomy, pathological physiology, propaedeutics of internal medicine, pharmacology, topographical anatomy and operative surgery, general surgery. Lay the foundation for the study of clinical surgery, traumatology and orthopedics, urology, neurosurgery, obstetrics, gynecology, anesthesiology, intensive care and other academic disciplines involving the use of surgical methods of treatment.

### **Expected learning outcomes. As a result of studying the discipline students should:**

- Identify the most common clinical symptoms and syndromes in the surgical clinic
- Diagnose and treat emergencies in the surgical clinic
- Demonstrate mastery of the moral and ethical principles of a medical specialist and the principles of professional subordination in surgery
- Interpret the general principles of treatment, rehabilitation and prevention of the most common surgical diseases
- Carry out prognosis of life and disability in the most common surgical diseases
- Identify the main etiological and pathogenetic factors of the most common surgical diseases
- Classify and analyze the typical clinical presentation of the most common surgical diseases

- Develop an examination plan and analyze laboratory and instrumental examinations for the typical course of the most common surgical diseases
- Demonstrate ability to perform necessary medical manipulations
- Conduct primary and secondary prevention of the most common surgical diseases
- Provide emergency medical care for the most common surgical conditions
- Carry out differential diagnosis, justify and formulate a preliminary diagnosis of the most common surgical diseases
- Demonstrate mastery of the moral and ethical principles of a medical specialist and the principles of professional subordination in surgery

***should know:***

- Modern concepts of domestic and foreign theoretical and practical surgery
- Determine management tactics (principles of surgical interventions and conservative treatment, rehabilitation measures) for the most common surgical diseases and their complications
- Plan the examination of the patient, interpret the results of laboratory and instrumental studies in the most common surgical diseases and their complications
- Herniotomy syndrome and complications of abdominal wall hernias.
- Acute cholecystitis
- Acute pancreatitis.
- Diseases complicated by obstructive jaundice (obstructive jaundice syndrome).
- Acute and chronic bleeding into the gastrointestinal tract.
- Acute bowel obstruction syndrome.
- Peritoneal syndrome.
- Methods of performing operations and know the indications for surgical intervention.
- Know the surgical accesses for surgical diseases.
- Main steps of typical surgical interventions
- Indications for drainage
- Master the treatment program protocols.
- Main symptoms and syndromes

***should be able to:***

- Identify the main clinical symptoms
- Interpret the symptom information
- Formulate and justify a clinical diagnosis.
- Make a differential diagnosis
- Justify the indications for and against showing surgical treatment.
- Justify the indications for conservative treatment
- Justify the list of laboratory and instrumental examinations
- Rationale for specialist advice
- Evaluate clinical, laboratory, radiologic, ultrasound, and endoscopic examinations of the patient
- Identify various clinical variants and complications of the most common surgical diseases
- Demonstrate proficiency in medical record keeping in a surgical clinic
- Diagnose complicated and atypical forms of the most common surgical diseases
- Plan an examination scheme for a specific patient depending on the clinical course of the disease
- Provide medical care for emergencies in the surgical clinic and perform emergency surgical manipulations and operations
- Perform differential diagnosis of the most common surgical diseases in emergency and elective surgery

- Determine a plan for conservative and surgical treatment of surgical diseases depending on pathogenetic factors and the severity of the patient's condition
- Diagnose emergency conditions in a pediatric surgery clinic and provide emergency medical care to a child
- Determine management tactics for a child with major surgical conditions
- Identify various clinical manifestations of complications and establish a preliminary diagnosis of surgical diseases and injuries in children
- Diagnose and determine treatment strategies for malformations
- Make a preliminary diagnosis of surgical malformations
- Diagnose and identify emergency treatment tactics for surgical malformations

***Has competencies***

The developed program corresponds to the educational and professional program (EPP) and is focused on competence formation:

***general (GK) - GK1 to GK3 of the SRB:***

- ability to think abstractly, analyze and synthesize, ability to learn and master modern knowledge.
- ability to apply knowledge in practical situations.
- Knowledge and understanding of the subject area and understanding of professional activities.

***professional competencies (FC) - FC1-FC6, 8, 9, 11, 16, 18 RPF***

- Patient Interviewing Skills.
- Ability to determine the required list of laboratory and instrumental examinations and to evaluate their results.
- Ability to establish a preliminary and clinical diagnosis of disease.
- Ability to determine the necessary work and rest mode in the treatment of diseases.
- Ability to determine the nature of nutrition in the treatment of diseases.
- Ability to determine the principles and nature of disease management.
- Ability to determine emergency medical care tactics.
- Emergency medical care skills.
- Skills in performing medical manipulations.
- Ability to determine management tactics for individuals subject to dispensary care.
- Ability to maintain medical records.

The developed program corresponds to and is focused on formation and maintenance of program learning outcomes (PLO): PLO 11, 13 - 18; 22; 25; 28; 30; 32; 33; 35; 41.

|        |   |
|--------|---|
| PLO 11 | <p>Collect data on patient complaints, medical history, life history (including professional anamnesis), in conditions of health care facility, its unit or at home of the patient, using the results of the interview with the patient, according to the standard scheme of interviewing the patient. In all circumstances (in a health care facility, its unit, at the patient's home, etc.), using knowledge of the person, his organs and systems, according to certain algorithms:</p> <p>collect information about the patient's general condition (consciousness, constitution) and physical appearance (examination of skin, subcutaneous fat layer, palpation of lymph nodes, thyroid and mammary glands);</p> <p>assess the child's psychomotor and physical development;</p> <p>Examine the cardiovascular system (examination and palpation of the heart and superficial vessels, percussion of the heart and vessels, auscultation of the heart and vessels)</p> <p>Examine the respiratory system (examination of the chest and upper airways, palpation of the chest, percussion and auscultation of the lungs)</p> <p>examine the abdominal organs (abdominal examination, palpation and percussion of the intestines, stomach, liver, spleen, palpation of the pancreas, kidneys, pelvic organs, palpation of the rectum);</p> |
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|        | <p>examine the musculoskeletal system (examination and palpation)<br/> to examine the condition of the nervous system;<br/> examine the condition of the genitourinary system;<br/> Evaluate fetal intrauterine development with fetal weight and fetal heartbeat auscultation.</p>   |
| PLO 13 | <p>In the setting of a health-care facility, its subdivision and among the attached population:<br/> Identify and report the leading clinical symptom or syndrome (List 1) by making an informed decision using initial patient history, physical examination data, knowledge of the person, his or her organs and systems, and adhering to appropriate ethical and legal standards.<br/> Be able to establish the most likely or syndromic diagnosis<br/> be able to make an informed decision by comparison with norms using pre-existing history and physical examination data, on the basis of a leading clinical symptom or syndrome, using knowledge of the individual, his/her organs and systems and complying with relevant ethical and legal rules.</p>   |
| PLO 14 | <p>In the setting of a health care facility, its subdivision:<br/> - • Prescribe laboratory and/or instrumental examination of the patient (according to list 4) by making an informed decision, based on the most probable or syndromic diagnosis, according to a standardized scheme, using knowledge of the person, its organs and systems, adhering to relevant ethical and legal rules.<br/> - • Carry out differential diagnosis of diseases (on list 2)<br/> By making an informed decision, according to a defined algorithm, using the most probable or syndromic diagnosis, given a laboratory and instrumental examination of the patient, knowledge of the person, its organs and systems, adhering to appropriate ethical and legal standards.<br/> - • Establish a provisional clinical diagnosis (List 2) by informed decision-making and logical analysis using the most probable or syndromic diagnosis, laboratory and instrumental examination of the patient, findings of referential diagnosis, knowledge of the person, his or her organs and systems, and appropriate ethical and legal standards.</p> |
| PLO 15 | <p>Determine appropriate work and rest patterns for the treatment of illness (List 2) in the health care setting, in the patient's home and during medical evacuation phases, including in the field, based on a preliminary clinical diagnosis, using knowledge of the person, their organs and systems, following appropriate ethical and legal standards, by making informed decisions based on existing algorithms and standard schemes.</p>  |
| PLO 16 | <p>Determine appropriate therapeutic nutrition for disease management (List 2), in the healthcare setting, in the patient's home and during medical evacuation phases, including. In the field based on a preliminary clinical diagnosis, using knowledge of the person, his/her organs and systems, adhering to relevant ethical and legal standards, by making informed decisions based on existing algorithms and standard schemes.</p>  |
| PLO 17 | <p>Determine the nature of treatment (conservative, surgical) of the disease (list 2), in the health care facility, at the patient's home and during medical evacuation, including the stages of medical evacuation. In the field based on a preliminary clinical diagnosis, using knowledge of the person, its organs and systems, adhering to the relevant ethical and legal standards, by making an informed decision on the existing algorithms and standard schemes.<br/> Determine principles of disease management (List 2), in the health care setting, at home and during medical evacuations, including in the field. In the field, based on a preliminary clinical diagnosis, using knowledge of the person, his/her organs and systems, adhering to relevant ethical and legal standards, by making informed decisions based on existing algorithms and standard schemes.</p>   |

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| PLO 18 | Establish a diagnosis (List 3) by making an informed decision and assessment of the person's condition, in all circumstances (home, street, health facility, its unit), including in an emergency, in the field, under conditions of lack of information and limited time, using standard techniques of physical examination and possible anamnesis, knowledge of the person, its organs and systems, adhering to relevant ethical and legal standards.  |
| PLO 22 | Perform medical manipulations (list 5) in a facility, home or workplace setting based on a preliminary clinical diagnosis and/or patient measures, using knowledge of the person, their organs and systems, adhering to appropriate ethical and legal standards, by making informed decisions and using standard techniques.   |
| PLO 25 | Shape, in the context of a health care facility, its units in the workplace, using a generalized human health assessment procedure, knowledge of the human being, its organs and systems, adhering to appropriate ethical and legal standards, by making informed decisions, among the assigned population :<br>dispensary groups of patients;<br>groups of healthy people subject to dispensary monitoring (Newborns, children, adolescents, pregnant women, representatives of professions, must undergo compulsory dispensary monitoring).  |
| PLO 28 | Organize secondary and tertiary prevention activities among the assigned population using a generalized health assessment procedure (screening, preventive health examinations, seeking medical care), knowledge of the human being, its organs and systems, adhering to relevant ethical and legal standards, by making informed decisions, in the health facility setting in particular:<br>form dispensary observation groups;<br>organize therapeutic and recreational activities differentiated by the dispensary group.  |
| PLO 30 | Carry out in the setting of a health care facility, its subdivision:<br>- • Detection and early diagnosis of infectious diseases (according to list2)<br>* primary anti-epidemic measures in the focus of infectious disease.  |
| PLO 32 | In a health care facility or in the patient's home, based on the patient's health status, using standardized charts, using knowledge of the person, their organs and systems, adhering to appropriate ethical and legal standards, by making an informed decision:<br>determine the tactics of examination and secondary prevention of patients, to be subject to dispensary observation;<br>Determine screening and primary prevention tactics for healthy individuals subject to dispensary care;<br>calculate and prescribe the necessary foods for children in the first year of life. |
| PLO 33 | Determine the presence and degree of disability, type, degree and duration of disability with registration of appropriate documents, in the conditions of health care facilities on the basis of data on the disease and its course, the peculiarities of professional activity of the person.   |
| PLO 35 | In the service area according to standard descriptive, analytical epidemiological and medico-statistical research methods:<br>conduct screening for major non-communicable diseases;<br>assess in dynamics and in comparison with statistical averages the indicators of morbidity, including chronic non-infectious diseases, disability, mortality, integral health indicators;<br>Identify risk factors for the occurrence and course of diseases;<br>form at-risk populations.   |
| PLO 41 | In the setting of a health care facility or its subdivision, according to standard methods:  |

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|  | <p>select and use evidence-based standardized clinical protocols for the delivery of health care;</p> <p>Participate in the development of local medical protocols;</p> <p>conduct quality control of health care based on statistical data, expert assessment and sociological data using structure, process and outcome indicators;</p> <p>identify barriers to improving the quality and safety of medical care.</p> |
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### **3. Program of study discipline**

The educational process is organized according to the European Credit Transfer and Accumulation System (ECTS).

The curriculum of the discipline consists of two blocks:

#### **Block #1.**

##### **Section 1.**

Topic 1: General issues of surgery.

Topic 2: General principles of surgical patient care

Topic 3: Symptoms and syndromes in surgery.

Topic 4 Surgical pathology of the venous and lymphatic systems

##### **Section 2.**

Topic 5. Acute appendicitis. Complications of acute appendicitis

Topic 6. Acute cholecystitis. Complications of acute cholecystitis

Topic 7: Acute pancreatitis. Chronic diseases of the pancreas

Topic 8 Peritonitis

Topic 9: Diseases of the small and large intestine.

Topic 10. Acute complications of peptic ulcer disease and 12 p. Cat.

Topic 11. Perforative ulcer

Topic 12. Diseases of the liver and spleen

Topic 13. Disease of extrahepatic bile ducts.

Topic 14. External and internal hernias of the abdomen. complications of hernias

Topic 15. External and internal hernias of the abdomen. complications of hernias

#### **unit 2**

##### **Section 1.**

Topic 16. Chronic diseases of the stomach and duodenum

Topic 17. Acute cholecystitis and its complications.

Topic 18. Acute intestinal obstruction.

Topic 19. Peritoneal adhesions

##### **Section 2.**

Topic 20. Chronic ischemia of the lower extremities

Topic 21. Diabetic foot syndrome

Topic 22. Acute limb ischemia syndrome.

Topic 23. Chronic venous insufficiency syndrome. Varicose veins of the lower extremities

Topic 24. Postomphlebitis syndrome

Topic 25. CURRENTCY of patients and writing medical history

Topic 26. Mastering skills

Topic 27. Protocols for treatment programmes

#### **Block 1.**

##### **section 1**

Topic 1: General issues of surgery. Examination of surgical patients. Principle of anatomical accessibility. Principle of physiological resolution. Principle of technical feasibility. Principle of legal authorization. The principle of moral or ethical resolution. Diagnosis of surgical diseases as a complex cognitive process. Interpretation of symptoms and syndromes in dynamics.



Reasonableness of use for diagnostics of surgical diseases the data: anamnesis, results of physical examination, laboratory and instrumental researches.

Topic 2: General principles of care for surgical patients. Regimen of treatment facilities. Medical and safety regime. Sanitary and hygienic regime. Sanitary-hygienic regime in the surgical unit, wards and intensive care units. Personal hygiene of patients and staff. Sanitary and hygienic regimen of nutrition of patients. Surgical diets. Parenteral nutrition in the surgical clinic.

Topic 3. Symptoms and syndromes in surgery. Features of the concept of symptom and syndrome. Symptoms and syndromes of surgical diseases: acute appendicitis, acute cholecystitis, extrahepatic bile duct disease, acute peritonitis, acute pancreatitis, acute intestinal obstruction, perforative ulcer, liver and spleen disease, external and internal hernias of the stomach, chronic diseases of the stomach and duodenum, vascular disease n\ extremities.

Topic 4. Surgical pathology of the venous and lymphatic systems. Varicose veins of the lower extremities. Classification. Complications. Diagnostics. Special methods of research. Methods of surgical treatment of thrombosis of the main veins. Classification. Clinic. Diagnostics. Differential diagnostics. Methods of conservative and surgical treatment. Post-thrombotic syndrome. Classification. Diagnostics. Conservative and surgical methods of treatment. Lymphadema of the extremities. The forms of the disease. Clinical conditions. Diagnostics. Variants of clinical course. Conservative and orthopedic treatment.

## **Section 2.**

Topic 5. Acute appendicitis and its complications. Acute appendicitis. Anatomical and physiological information. Etiology and pathogenesis. Classification. Clinical picture of the typical course of acute appendicitis. Diagnosis and differential diagnosis of acute appendicitis. The tactics of treatment of acute appendicitis. Types of appendectomies. Peculiarities of the course of acute appendicitis in pregnant women, children and elderly patients. Atypical forms of acute appendicitis. The diagnostic and therapeutic program. The role of laparoscopic techniques in the diagnosis and treatment of patients with acute appendicitis. Complications of acute appendicitis: appendicular infiltrate, appendicular abscess, interstitial, subhepatic, pelvic and subdiaphragmatic abscesses, appendicular peritonitis. Pelephlebitis. Sepsis. Clinic, diagnosis, modern therapeutic tactics. Complications of appendectomy. Diagnosis and treatment.

Topic 6. Acute cholecystitis and its complications. Anatomical and physiological features of the biliary tract. Definition, etiology and pathogenesis of acute cholecystitis. Classification. Clinic, diagnosis, differential diagnosis. Surgical tactics. Peculiarities of clinical course, clinical picture of acute cholecystitis and diagnostic and treatment program in elderly patients with concomitant pathology. Complications of acute cholecystitis (gallbladder perforation, perivesical infiltrates and abscesses, cholangitis, cholangiogenic liver abscesses, biliary peritonitis, liver failure, mechanical jaundice, cholecystopancreatitis). Complications of cholecystectomy (intraoperative damages of extrahepatic biliary tract, vessels, abdominal cavity organs). Diagnosis and surgical tactics.

Topic 7: Acute pancreatitis. Chronic diseases of the pancreas. Acute pancreatitis and its complications. Etiology and pathogenesis of acute pancreatitis. Periods of clinical course of acute pancreatitis. Clinic of mild and severe acute pancreatitis. Diagnostic methods of acute pancreatitis: clinical, laboratory, instrumental - ultrasound, CT, laparoscopy. Differential diagnostics of acute pancreatitis. Complications of acute pancreatitis: acute pancreatic pseudocyst, pancreatic abscess, widespread peritonitis, necrosis of cavity walls, bleeding into the abdominal cavity, acute ulcers of the digestive tract, bleeding from acute ulcers into the digestive tract, perforation of acute ulcers. Current therapeutic tactics in acute pancreatitis. Conservative therapy. Indications for surgical treatment.

Topic 8. Peritonitis. Acute peritonitis. Etiology, pathogenesis of acute peritonitis. Clinical characteristics of the stages of peritonitis. Features of the clinical course of primary and secondary peritonitis. Clinical characteristics of local and widespread acute peritonitis. Diagnostic program. Instrumental methods of research in acute peritonitis. Differential diagnostics of acute local and widespread peritonitis. Surgical tactics in acute local and widespread peritonitis. Puncture methods

of treatment. Methods of prolonged abdominal cavity sanitation. Laparostomy. Intensive care for purulent peritonitis. Practical skills of work in a dressing room (wound care, drainage, change of dressings, removal of drainages, removal of sutures, wound separation, surgical treatment of purulent foci). Work in the intensive care unit.

Topic 9: Diseases of the small and large intestine. Diseases of the small intestine. Research methods. Classification of surgical diseases of the small intestine. Diverticula, Meckel's diverticulum, its complications. Crohn's disease of the small intestine, intestinal infectious and parasitic diseases. Surgical tactics for complicated forms of infectious and parasitic diseases of the small intestine. Non-specific ulcerative colitis (etiology, pathogenesis, clinic, methods of examination, differential diagnosis, conservative and surgical treatment). Crohn's disease of the colon (etiology, pathogenesis, clinic, methods of investigation, differential diagnosis, conservative and surgical treatment).

Topic 10. Complications of peptic ulcer disease of the stomach and duodenum. Etiology and pathogenesis of perforative gastroduodenal ulcers. Piloduodenal stenosis (pathogenesis, clinic, features of clinical manifestations of different stenosis degrees, differential diagnosis, methods of investigation, conservative and surgical treatment, types of operation). Duodenal stenosis. Malignization of ulcer (state of the problem, clinical manifestations, differential diagnosis, methods of research, peculiarities of surgeries). Ulcerogenic endocrine diseases (primary hyperparathyroidism, Zollinger-Ellison syndrome, peculiarities of clinic, diagnostics and treatment). Mallory-Weiss syndrome.

Topic 11. Perforative ulcer. Perforative ulcer. Clinic of typical and atypical perforating gastroduodenal ulcer. Diagnostic program for perforative ulcer. Differential diagnostics of typical and atypical perforative gastroduodenal ulcer. Treatment tactics for perforative gastroduodenal ulcer. Preparation of the patient to surgical intervention and choice of optimal way of operative intervention. Conservative therapy in postoperative period.

Topic 12. Diseases of the liver and spleen. Diseases of the liver and spleen. Fibrosis, cirrhosis of the liver. Surgical aspects of the topic. Pathogenesis. Clinic. Complications. Methods of diagnostics. Differential diagnostics. The treatment. Syndrome of portal hypertension. Classification. Principles of conservative and surgical treatment of portal hypertension and its complications. Liver failure. State of the problem. Classification. Pathogenesis. Clinical manifestations depending on the severity degree. Modern methods of treatment of hepatic insufficiency. Liver transplantation. Diseases of the spleen (trauma, abscess, cysts, infarct, splenomegaly, hypersplenism, Verlhof disease, Banti disease, hemolytic jaundice, malarial splenomegaly). Clinic. Diagnostics. Differential diagnostics. The treatment. Indications for splenectomy. Post splenectomy syndrome.

Topic 13. Disease of the extrahepatic bile ducts. Gallstone disease. Etiology. Pathogenesis. Causes of concrements formation. Clinic, diagnostics. Differential diagnostics. Chronic calculous cholecystitis. Clinical manifestations. Complications. Methods of treatment. Differential diagnostics. Principles of treatment. Indications for endoscopic, laparoscopic and minilaparotomy access. Postcholecystectomy syndrome. Frequency. Classification. The clinic of the different forms. Differential diagnostics. Methods of diagnostics. Treatment. Jaundice as a surgical problem. Etiology, pathogenesis. Clinical manifestations. Methods of research. Principles of conservative treatment. Surgical tactics. Role of minimally invasive surgical methods in treatment of mechanical jaundice.

Topic 14. External and internal hernias of the abdomen. Complications of hernias. External abdominal hernias. Definition. Relevance of the topic. Classification. Etiology. Pathogenesis. The clinical picture of the disease. Modern methods of examination. General principles of surgical treatment. Indications and contraindications for surgery. Hernia of the white line of the abdomen. Umbilical hernia. Postoperative hernias. Typical clinic. Classification. Differential diagnosis of each type of hernia. Methods of surgical intervention: classical and laparoscopic. Groin and femoral hernias. Typical clinical picture. Classification. Differential diagnostics. Methods of surgical intervention (methods of Lichtenstein, Cilbert, Shouldice, classical and laparoscopic). Complications of hernias (acute and chronic). Types of impingement by mechanism, clinical

picture. Classical clinic of pinch and features of the clinical course of its various forms. Differential diagnosis. Methods of examination.

Topic 15. External and internal hernias of the abdomen. Features of surgical intervention in impinged hernias. Inflammation, trauma, phlegmon of the hernia sac, intractable hernia, intestinal obstruction. Diagnosis, treatment. Internal hernia. Definition. Classification. Etiology. Pathogenesis. Clinic of the disease. Complications. The treatment. Diaphragmatic hernias. Classification. Indications for surgical treatment. Methods of operation for hernia of the esophageal orifice of the diaphragm.

## **Block 2.**

### **section 1**

Topic 16. Chronic diseases of the stomach and duodenum. Features of clinical manifestations, diagnosis and treatment of chronic ulcers of the stomach and duodenum. Indications and methods of operative interventions. Penetration of peptic ulcer of stomach and duodenum (pathogenesis, dependence of clinic on Penetrating organ, differential diagnosis, methods of investigation, conservative and operative treatment, types of operations).

Topic 17. Acute cholecystitis and its complications. Anatomical and physiological features of the biliary tract. Definition, etiology and pathogenesis of acute cholecystitis. Classification. Clinic, diagnosis, differential diagnosis. Surgical tactics.

Topic 18. Acute intestinal obstruction. Etiology, pathogenesis, clinic, diagnosis, differential diagnosis of mechanical intestinal obstruction. The principles of patient preparation for surgery, surgical techniques and management of the postoperative period.

Topic 19. Peritoneal adhesions: causes pathogenesis. Clinic of various forms of SCA, diagnosis, conservative and surgical treatment, indications, features and types of surgical interventions.

### **sections 2**

Topic 20. Chronic ischemia of the lower extremities Obliterating atherosclerosis, obliterating endarteritis, Raynaud's disease, Takayasu disease. Causes, pathogenesis of chronic ischemia by level of occlusion of aorta and limb arteries. Clinic, diagnosis, differential diagnosis, treatment.

Topic 21. Diabetic foot syndrome: causes, pathogenesis. Clinical manifestations, variants of the clinical course, complications. Diagnosis, differential diagnosis. Conservative and surgical treatment of diabetic angiopathy,

Topic 22. Acute limb ischemia syndrome. Causes: arterial thrombosis and embolism, limb trauma, compartment syndrome. Classification of acute limb ischemia syndrome. Clinic, variants of the clinical course, complications. Diagnosis, first aid, treatment tactics

Topic 23. Chronic venous insufficiency syndrome. Varicose veins of the lower extremities, primary and secondary varicose veins. Causes, pathogenesis, clinic, diagnosis, complications. Methods of surgical treatment

Topic 24. Thrombosis and thrombophlebitis of the superficial and deep main veins of the extremities. Causes, pathogenesis, clinic, diagnosis, complications. Conservative and surgical treatment.

Topic 25. Postrombophlebitis syndrome. Etiopathogenesis, classification. Clinic. Diagnostics, differential diagnostics. Conservative and methods of surgical treatment. Trophic ulcer as a complication of varicose vein disease: causes, pathogenesis, clinic, methods of treatment. Limb lymphedema. Causes, pathogenesis, clinic.

Topic 26. CURRENCY of patients and writing medical history

Topic 27. Skills (bladder catheterization, v/u, v/m, p/k injection, etc.). Performing CPR, etc.)

Topic 28. Protocols of treatment programs. Order of the MOH of UKRAINE of 02.04.2010 N 297 On approval of the standards and clinical protocols of medical care in the specialty "Surgery".

### 3. Structure of the training discipline

| Block and topic names  | number of hours |                              |           |                          |                |           |
|--|-----------------|------------------------------|-----------|--------------------------|----------------|-----------|
|  | daytime form    |                              |           |                          |                |           |
|  | total           | including but not limited to |           |                          |                |           |
| л  |                 | п                            | lab.      | and<br>tha<br>t's<br>it. | s.<br>d.<br>s. |           |
| 1  | 2               | 3                            | 4         | 5                        | 6              | 7         |
| <b>unit 1</b>  |                 |                              |           |                          |                |           |
| <b>1. general surgical issues</b>  |                 |                              |           |                          |                |           |
| Topic 1: General issues of surgery. Examination of surgical patients   | 5               | 2                            | 2         | -                        | -              | 1         |
| Topic 2: General principles of surgical patient care.  | 3               | -                            | 2         | -                        | -              | 1         |
| Topic 3: Symptoms and syndromes in surgery.  | 3               | -                            | 2         | -                        | -              | 1         |
| Topic 4 Surgical pathology of the venous and lymphatic systems   | 4               | -                            | 2         | -                        | -              | 2         |
| <b>2. Urgent abdominal surgery</b>   |                 |                              |           |                          |                |           |
| Topic 5. Acute appendicitis. Complications of acute appendicitis   | 8               | 2                            | 4         |                          |                | 2         |
| Topic 6. Acute cholecystitis. Complications of acute cholecystitis   | 4               |                              | 2         |                          |                | 2         |
| Topic 7: Acute pancreatitis. Chronic diseases of the pancreas  | 4               |                              | 2         |                          |                | 2         |
| Topic 8 Peritonitis  | 6               | 2                            | 2         |                          |                | 2         |
| Topic 9: Diseases of the small and large intestine.  | 4               |                              | 2         |                          |                | 2         |
| Topic 10. Acute complications of peptic ulcer disease of the stomach and 12 duodenum.  | 6               |                              | 4         |                          |                | 2         |
| Topic 11. Perforative ulcer  | 4               |                              | 2         |                          |                | 2         |
| Topic 12. Diseases of the liver and spleen   | 4               |                              | 2         |                          |                | 2         |
| Topic 13. Disease of extrahepatic bile ducts.  | 3               |                              | 2         |                          |                | 1         |
| Topic 14. External and internal hernias of the abdomen. complications of hernias   | 4               |                              | 2         |                          |                | 2         |
| Topic15. External and internal hernias of the abdomen. complications of hernias  | 4               |                              | 2         |                          |                | 2         |
| <b>Final control work No. 1 together</b>   | <b>4</b>        |                              | <b>2</b>  |                          |                | <b>2</b>  |
|  | <b>70</b>       | <b>6</b>                     | <b>36</b> | <b>-</b>                 | <b>-</b>       | <b>28</b> |
| <b>block #2</b>  |                 |                              |           |                          |                |           |
| <b>Section 1. Surgical gastroenterology</b>  |                 |                              |           |                          |                |           |
| Topic 16. Chronic diseases of the stomach and duodenum. Features of clinical manifestations, diagnosis and treatment of chronic ulcers of the stomach and duodenum. Indications and methods of surgical interventions.   | 6               | 2                            | 2         |                          |                | 2         |
| Topic 17. Acute cholecystitis and its complications. Anatomical and physiological features of the biliary tract. Definition, etiology and pathogenesis of acute cholecystitis. Classification. Clinic, diagnosis, differential diagnosis. Surgical tactics.        | 4               |                              | 2         |                          |                | 2         |
| Topic 18. Acute intestinal obstruction. Etiology, pathogenesis, clinic, diagnosis, differential diagnosis of mechanical intestinal obstruction. The principles of patient preparation for surgery, surgical techniques and management of the postoperative period. | 4               |                              | 2         |                          |                | 2         |
| Topic 19. Peritoneal adhesions: causes pathogenesis. Clinic of various forms of SCA, diagnosis, conservative and surgical treatment, indications, features and types of surgical interventions.  | 4               |                              | 2         |                          |                | 2         |
| <b>Section 2 Surgical diseases of the arterial and venous vessels</b>  |                 |                              |           |                          |                |           |
| Topic 20. Chronic ischemia of the lower extremities Obliterating atherosclerosis, obliterating endarteritis, Raynaud's disease, Takayasu disease. Causes, pathogenesis of chronic ischemia by  | 6               | 2                            | 2         |                          |                | 2         |

|  |            |           |           |          |          |           |
|--|------------|-----------|-----------|----------|----------|-----------|
| level of occlusion of aorta and limb arteries. Clinic, diagnosis, differential diagnosis, treatment.   |            |           |           |          |          |           |
| Topic 21. Diabetic foot syndrome: causes, pathogenesis. Clinical manifestations, variants of the clinical course, complications. Diagnosis, differential diagnosis. Conservative and surgical treatment of diabetic angiopathy,  | 4          |           | 2         |          |          | 2         |
| Topic 22. Acute limb ischemia syndrome. Causes: arterial thrombosis and embolism, limb trauma, compartment syndrome. Classification of acute limb ischemia syndrome. Clinic, variants of the clinical course, complications. Diagnosis, first aid, treatment tactics   | 6          | 2         | 2         |          |          | 2         |
| Topic 23. Chronic venous insufficiency syndrome. Varicose veins of the lower extremities, primary and secondary varicose veins. Causes, pathogenesis, clinic, diagnosis, complications. Methods of surgical treatment.   | 4          |           | 2         |          |          | 2         |
| Topic 24. Thrombosis and thrombophlebitis of the superficial and deep main veins of the extremities. Causes, pathogenesis, clinic, diagnosis, complications. Conservative and surgical treatment.  | 4          |           | 2         |          |          | 2         |
| Topic 25. Postrombophlebitis syndrome. Etiopathogenesis, classification. Clinic. Diagnostics, differential diagnostics. Conservative and methods of surgical treatment. Trophic ulcer as a complication of varicose vein disease: causes, pathogenesis, clinic, methods of treatment. Limb lymphedema. Causes, pathogenesis, clinic. | 4          |           | 2         |          |          | 2         |
| Topic 26. Treatment of patients and writing up medical history   | 6          |           | 4         |          |          | 2         |
| Topic 27. Mastering skills: (Bladder catheterization, in \u, in \m, n\ to injection. Performing PCI, etc.)   | 6          |           | 4         |          |          | 2         |
| Topic 28. Protocols for treatment programmes   | 7          |           | 4         |          |          | 3         |
| <b>Final control work</b>  | <b>2</b>   |           | <b>2</b>  |          |          |           |
| <b>together</b>  | <b>65</b>  | <b>4</b>  | <b>34</b> | <b>-</b> | <b>-</b> | <b>27</b> |
| <b>Total (block 1 and 2)</b>   | <b>135</b> | <b>10</b> | <b>70</b> | <b>-</b> | <b>-</b> | <b>55</b> |

#### 4. Content of the training discipline

##### 4.1. lecture plan

| №  | Topic of the class / plan  | number of Hours |
|----|--|-----------------|
| 1  | <b>Theme 1:</b> General issues of surgery.<br>1. Examination of surgical patients<br>2. Principle of anatomical accessibility. Principle of physiological resolution. Principle of technical feasibility. The principle of legal authorization. The principle of moral or ethical resolution.<br>3. Diagnosis of surgical diseases as a complex cognitive process. | 2               |
| 2  | <b>Topic 2.</b> Acute appendicitis. Complications of acute appendicitis<br>1. etiopathogenesis, classification.<br>2. Clinic. Diagnosis, differential diagnosis.<br>3. surgical treatment.   | 2               |
| 3  | <b>Topic 3:</b> Diseases of the liver and spleen<br>1. etiopathogenesis, classification.<br>2. Clinic. Diagnosis, differential diagnosis.<br>3. surgical treatment.  | 2               |
| 4. | <b>Topic 4:</b> Chronic diseases of the stomach and duodenum.<br>1. Peculiarities of clinical manifestations.  | 2               |

|    |  |           |
|----|--|-----------|
|    | 2. Diagnosis and treatment of chronic peptic ulcer of the stomach and duodenum.<br>3. Indications and modalities of surgical interventions.  |           |
| 5. | <b>Topic 5</b> Chronic ischemia of the lower extremities<br>1. obliterating atherosclerosis<br>2. Obliterative endarteritis, Raynaud's disease, Takayasu's disease.<br>3. Causes, pathogenesis of chronic ischemia by the level of aortic and limb arteries occlusion.<br>4. Clinic, diagnosis, differential diagnosis, treatment. | 2         |
|    | <b>total</b>   | <b>10</b> |

#### 4.2. Practical lesson plan

| <b>unit 1</b>  |           |
|--|-----------|
| <b>Section 1: General surgical issues</b>  |           |
| Topic 1: General issues of surgery. Examination of surgical patients   | 2         |
| Topic 2: General principles of surgical patient care.  | 2         |
| Topic 3: Symptoms and syndromes in surgery.  | 2         |
| Topic 4 Surgical pathology of the venous and lymphatic systems   | 2         |
| <b>2. Urgent abdominal surgery</b>   |           |
| Topic 5. Acute appendicitis. Complications of acute appendicitis   | 4         |
| Topic 6. Acute cholecystitis. Complications of acute cholecystitis   | 2         |
| Topic 7: Acute pancreatitis. Chronic diseases of the pancreas  | 2         |
| Topic 8 Peritonitis  | 2         |
| Topic 9: Diseases of the small and large intestine   | 2         |
| Topic 10. Acute complications of peptic ulcer disease of the stomach and 12 duodenum   | 4         |
| Topic 11. Perforative ulcer  | 2         |
| Topic 12. Diseases of the liver and spleen   | 2         |
| Topic 13. Disease of extrahepatic bile ducts   | 2         |
| Topic 14. External and internal hernias of the abdomen. complications of hernias   | 2         |
| Topic15. External and internal hernias of the abdomen. complications of hernias  | 4         |
| <b>together</b>  | <b>36</b> |
| <b>block #2</b>  |           |
| <b>1. surgical gastroenterology</b>  |           |
| Topic 16. Chronic diseases of the stomach and duodenum. Features of clinical manifestations, diagnosis and treatment of chronic ulcers of the stomach and duodenum. Indications and methods of surgical interventions.   | 2         |
| Topic 17. Acute cholecystitis and its complications. Anatomical and physiological features of the biliary tract. Definition, etiology and pathogenesis of acute cholecystitis. Classification. Clinic, diagnosis, differential diagnosis. Surgical tactics.  | 2         |
| Topic 18. Acute intestinal obstruction. Etiology, pathogenesis, clinic, diagnosis, differential diagnosis of mechanical intestinal obstruction. The principles of patient preparation for surgery, surgical techniques and management of the postoperative period.                                 | 2         |
| Topic 19. Peritoneal adhesions: causes pathogenesis. Clinic of various forms of SCA, diagnosis, conservative and surgical treatment, indications, features and types of surgical interventions.  | 2         |
| <b>Section 2 Surgical diseases of the arterial and venous vessels</b>  |           |
| Topic 20. Chronic ischemia of the lower extremities Obliterating atherosclerosis, obliterating endarteritis, Raynaud's disease, Takayasu disease. Causes, pathogenesis of chronic ischemia by level of occlusion of aorta and limb arteries. Clinic, diagnosis, differential diagnosis, treatment. | 2         |
| Topic 21. Diabetic foot syndrome: causes, pathogenesis. Clinical manifestations, variants of the clinical course, complications. Diagnosis, differential diagnosis. Conservative and surgical treatment of diabetic angiopathy,  | 2         |

|  |           |
|--|-----------|
| Topic 22. Acute limb ischemia syndrome. Causes: arterial thrombosis and embolism, limb trauma, compartment syndrome. Classification of acute limb ischemia syndrome. Clinic, variants of the clinical course, complications. Diagnosis, first aid, treatment tactics   | 2         |
| Topic 23. Chronic venous insufficiency syndrome. Varicose veins of the lower extremities, primary and secondary varicose veins. Causes, pathogenesis, clinic, diagnosis, complications. Methods of surgical treatment.   | 2         |
| Topic 24. Thrombosis and thrombophlebitis of the superficial and deep main veins of the extremities. Causes, pathogenesis, clinic, diagnosis, complications. Conservative and surgical treatment.  | 2         |
| Topic 25. Postrombophlebitis syndrome. Etiopathogenesis, classification. Clinic. Diagnostics, differential diagnostics. Conservative and methods of surgical treatment. Trophic ulcer as a complication of varicose vein disease: causes, pathogenesis, clinic, methods of treatment. Limb lymphedema. Causes, pathogenesis, clinic. | 2         |
| Topic 26. CURRENCY of patients and writing medical history   | 4         |
| Topic 27. Mastering skills:<br>(Bladder catheterization, in \u, in \m, n\ to injection. Performing PCI, etc.)  | 4         |
| Topic 28. Protocols for treatment programmes   | 4         |
| <b>Final control work</b>  | <b>2</b>  |
| <b>Total (block 2)</b>   | <b>34</b> |
| <b>Total (block 1 and 2):</b>  | <b>70</b> |

### 4.3 Assignments for independent work

| No. of items.    | THEME   | number of hours |
|------------------|---|-----------------|
| <b>BLOCK 1</b>   |   |                 |
| 1.               | Preparation for practical classes (theoretical training, practicing practical skills)                             | 7               |
| 2.               | Taking online courses and online testing  | 8               |
| 3.               | Independent study of topics that are not included in the plan of classroom lessons Block 1 (the list is attached) | 8               |
| 4.               | individual work   | 3               |
| 5.               | Preparing for the final examination   | 2               |
| <b>Together:</b> |   | <b>28</b>       |
| <b>BLOCK 2</b>   |   |                 |
| 1.               | Preparation for practical classes (theoretical training, practicing practical skills)                             | 7               |
| 2.               | Taking online courses and online testing  | 7               |
| 3.               | Independent study of topics that are not part of the classroom plan Block 2 (list attached)                       | 8               |
| 4.               | individual work   | 3               |
| 5.               | Preparing for the final examination   | 2               |
| <b>Together:</b> |   | <b>27</b>       |
| <b>in total:</b> |   | <b>55</b>       |

**List of questions for Block 1**  
**section 1**

1. Anatomical and physiological features of abdominal organs
2. Etiology, pathogenesis of urgent abdominal diseases
3. Classification, clinical picture of urgent abdominal cavity diseases, diagnostic methods, methods of conservative and surgical treatment of urgent abdominal cavity diseases
4. Differential diagnosis with other acute abdominal, retroperitoneal and thoracic diseases
5. principles of postoperative treatment and rehabilitation of patients with urgent abdominal pathology
6. indications for emergency, urgent (24-48 hours) operations, indications for minimally invasive (under the control of ultrasound and laparoscopic) interventions
7. Risk factors for postoperative complications
8. Analysis and interpretation of laboratory, radiological and instrumental findings
9. Moral and deontological principles of medical specialist and principles of professional subordination in surgery
10. Prognosis of life and disability in urgent abdominal surgical diseases

**section 2**

11. acute appendicitis. Anatomico-physiological information. Etiology and pathogenesis. Classification. Clinical picture of the typical course of acute appendicitis. Diagnosis and differential diagnosis of acute appendicitis. The tactics of treatment of acute appendicitis.
12. types of appendectomies. Features of the course of acute appendicitis in pregnant women, children and elderly patients. " "Atypical forms of acute appendicitis. Diagnostic and treatment program.
13. Complications of acute appendicitis: appendicular infiltrate, appendicular abscess, interstitial, subhepatic, pelvic and subdiaphragmatic abscesses, appendicular peritonitis, retroperitoneal phlegmon. Pylephlebitis. Sepsis.
14. Anatomical and physiological features of the biliary tract. Definition, etiology and pathogenesis of acute cholecystitis. Classification. Clinic, diagnosis, differential diagnosis.
15. Surgical tactics. Peculiarities of clinical course, clinical picture of acute cholecystitis and diagnostic and treatment program in elderly patients and patients with concomitant pathology.
16. Complications of acute cholecystitis (gallbladder perforation, perivesical infiltrates and abscesses, cholangitis, cholangiogenic liver abscesses, biliary peritonitis, liver failure, mechanical jaundice, cholecystopancreatitis).
17. Complications of cholecystectomy (intraoperative injuries of extrahepatic biliary tract, vessels, abdominal organs). Diagnosis and surgical tactics.
18. etiology and pathogenesis of acute pancreatitis. Periods of the clinical course of acute pancreatitis.
19. Clinic of mild and severe acute pancreatitis. Diagnostic methods of acute pancreatitis: clinical, laboratory, instrumental - ultrasound, CT, laparoscopy.
20. Differential diagnosis of acute pancreatitis. Complications of acute pancreatitis: acute pancreatic pseudocyst, pancreatic abscess, widespread peritonitis, necrosis of cavity walls, bleeding into the abdominal cavity, acute ulcers of the digestive tract, bleeding from acute ulcers into the digestive tract, perforation of acute ulcers.
21. Modern therapeutic tactics in acute pancreatitis. Conservative therapy. Indications for surgical treatment. Methods of minimally invasive and open surgical interventions. »
22. External abdominal hernias. Definition. Relevance of the topic. Classification. Etiology. Pathogenesis. 13. Clinic of the disease. Modern methods of examination. General principles of surgical treatment. Indications and contraindications for surgery.
23. Hernias of the white line of the abdomen. Umbilical hernias. Postoperative hernias. Typical clinic. Classification. Differential diagnosis of each type of hernia.
24. Methods of surgical intervention: classical and laparoscopic. Groin and femoral hernia. Typical clinical presentation. Classification. Differential diagnosis.
25. surgical intervention (methods of Lichtenstein, Cilbert, Shouldice, classical and laparoscopic). Complications of hernias (acute and chronic).



**unit 2**  
**section 1**

26. etiology and pathogenesis of perforative gastroduodenal ulcers. Clinic of typical and atypical perforating gastroduodenal ulcer.
27. Diagnostic program in perforating ulcer. Differential diagnosis of typical and atypical perforating ulcer. Therapeutic tactics.
28. Clinic of peptic ulcer bleeding. Laboratory and endoscopic methods of diagnosis of peptic ulcer bleeding. Differential diagnosis of gastrointestinal bleeding. treatment tactics
29. Complications of acute cholecystitis (gallbladder perforation, perivesical infiltrates and abscesses, cholangitis, cholangiogenic liver abscesses, biliary peritonitis, liver failure, mechanical jaundice, cholecystopancreatitis).
30. Complications of cholecystectomy (intraoperative injuries of extrahepatic biliary tract, vessels, abdominal organs).
31. Diagnosis and surgical tactics. The role of minimally invasive techniques in the diagnosis and treatment of complications of acute cholecystitis and cholecystectomy. »
32. Acute intestinal obstruction Definition of the concept. Etiology and pathogenesis. Typical clinical picture. Classification (etiology, anatomical localization, clinical course). Differential diagnosis.
33. Peculiarities of examination of a patient with acute intestinal obstruction. Mechanical bowel obstruction.
34. Early clinical signs of mechanical intestinal obstruction. Features of the clinical course of various forms of mechanical intestinal obstruction.
35. Modern diagnostic methods. Peculiarities of preoperative preparation. Peculiarities of general anesthesia.
36. Surgical tactics in acute intestinal obstruction and types of surgical interventions depending on its cause. Features of management of the postoperative period. The consequences of surgical treatment.
37. Adhesive disease. Etiology, pathogenesis. Classification. Clinic.
38. Indications for surgical treatment. Features and types of surgical interventions

**section 2**

39. Chronic ischemia of the lower extremities Obliterating atherosclerosis, obliterating endarteritis, Raynaud's disease, Takayasu disease. Causes, pathogenesis of chronic ischemia by level of occlusion of aorta and limb arteries. Clinic, diagnosis, differential diagnosis, treatment.
40. Diabetic foot syndrome: causes, pathogenesis
41. Clinical manifestations, variants of the clinical course, complications. Diagnosis, differential diagnosis. Conservative and surgical treatment of diabetic angiopathy
41. Acute limb ischemia syndrome. Causes: arterial thrombosis and embolism, limb trauma, compartment syndrome.
42. Classification of acute limb ischemia syndrome. Clinic, variants of the clinical course, complications. Diagnosis, first aid, treatment tactics
44. Chronic venous insufficiency syndrome. Varicose veins of the lower extremities, primary and secondary varicose veins
45. Causes, pathogenesis, clinic, diagnosis, complications. Methods of surgical treatment.
46. Thrombosis and thrombophlebitis of superficial and deep main veins of the limbs. Causes, pathogenesis, clinic, diagnosis, complications. Conservative and surgical treatment.
47. Postthrombophlebitis syndrome. Etiopathogenesis, classification. Clinic. Diagnosis, differential diagnosis.
48. Conservative and methods of surgical treatment. Trophic ulceration as a complication of varicose vein disease: causes, pathogenesis, clinic, methods of treatment. Limb lymphedema. Causes, pathogenesis, clinic.

## Typical test problems to be solved in practical classes

### Situation objective No. 1

**Instructions:** Become familiar with the situation and give a detailed answer to the question.

#### Main part

Patient M. 50 years old consulted a general practitioner with complaints of nausea, acute nocturnal and hunger pains in the epigastrium, somewhat less after meals, nausea, "coffee grounds" vomiting, black stools at the same time. Being treated for rheumatoid arthritis, for a long time (over 3 months) she took indomethacin 1 tablet 3 times a day. Previously she had not registered any such complaints and did not consult a physician. Objectively: state of moderate severity. Skin was pale. Mild malnutrition. Her tongue was covered with white plaque, moist. Her lungs had vesicular respiration, BP - 16 rpm. The heart tones were clear, rhythmic, heart rate - 88 beats per min, BP - 110/70 mm Hg. The abdomen is tense, sharply painful locally in the Schofar area. Symptoms of peritoneal irritation were negative. The stool is black. Urination was not impaired. Clinical blood count: hemoglobin - 100 g / l; red blood cells -  $3,0 \times 10^{10}$  / l; white blood cells  $8.4 \times 10^9$  / l; stabular - 4%; segmented - 61%; eosinophils - 1%; lymphocytes - 30%; monocytes - 4%; sed rate - 20 mm / hour.

#### Question:

1. Make an assumption about the most likely diagnosis.
2. Justify the diagnosis you have made.
3. Formulate and justify a plan for additional examination of the patient.
4. Which group of antiulcer drugs would you recommend to the patient for initial therapy? Justify your choice.
5. After 2 weeks of esomeprazole therapy signs of ulcer scarring were detected. What is your further treatment strategy? Justify your choice.

### Situation task No. 2

**Instructions:** Become familiar with the situation and give detailed answers to the questions.

#### Main part.

A 35-year-old patient was treated in the urological department for urolithiasis, her temperature increased to 39°C, chills, tapping symptom was sharply positive. General urinalysis showed signs of urinary tract infection. The patient was diagnosed with acute pyelonephritis against the background of urolithiasis, the material was sent to the bacteriological laboratory for culture.

#### Question:

1. Which group of antibiotic chemotherapy agents would you recommend to the patient? Justify your choice.
2. After 2 days of antibiotic therapy clinical effect is negligible, bacteriologically determined that E. coli is a producer of extended spectrum  $\beta$ -lactamase, which destroys all penicillins and cephalosporins. Suggest a choice of antibiotic.
3. Bacteriological analysis data showed sensitivity of E. coli to imipenem and meropenem. Of these, should the patient be prescribed?
4. On the 4th day of meropenem use urticaria, Quincke's edema appeared, due to which the drug has been cancelled. Suggest substitution of the drug.
5. What should be the duration of antibiotic therapy in complicated pyelonephritis? Examination of the patient.
6. Which groups of drugs should be administered to the patient? Justify your choice.

**example** of an examination ticket:

Petro Mohyla Black Sea National University

"Approve."  
Head of the Department of Therapeutic and Surgical Disciplines  
\_\_\_\_\_  
Doctor of Medical Sciences, Professor

Discipline: Surgeons  
Specialty 222 - "Medicine"

Tarasenko O.N.

### Examination ticket No. 0

- 1.1 Anatomic-functional information about the cecum and appendicular appendix. Methods of examination of patients with acute appendicitis.
- 1.2 Typical clinical picture of acute cholecystitis, its peculiarities among young and old people.
- 1.3 Preoperative preparation of patients with acute cholecystitis.
- 1.4 Complications of peptic ulcer disease
- 1.5 Differential diagnosis of bowel obstruction
- 1.6. Hernias are impinged. Typical clinical presentation. Clinical types of impinged hernias. Diagnosis, differential diagnosis.
- 1.7. Assignment:

A 21-year-old patient with complaints of lower abdominal pain, more to the point, nausea, general weakness was delivered by an ambulance team to a sanitary assistant of a city urgent hospital. The pains started in the epigastric region, then localized in the lower abdomen on the right side. The patient had been in pain for 3-4 weeks. Objectively: pale skin, whitish plaque on the tongue. P - 80 beats/min. A / T - 125/90 mm The abdomen of the usual shape, involved in the act of breathing. Muscle, slight tension is defined in the lower right abdomen. Moderately positive symptoms are defined: Schetkin-Blumberg, Razdolsky, Rovzing, Obratsov, Volkovich-Kocher. Urination was normal, there were no stools.

Question:

1. Your diagnosis?
2. What amount of additional research is indicated in this case?
3. Further management of the patient?

The maximum number of points a student can accumulate:

1 question - 10 points x 6 = 60 points

Task solution - 20 points

The sum of correct answers is 80 points.

*Approved at the meeting of the Department of "Surgical disciplines", Minutes № \_\_\_\_ of  
" \_\_\_\_ " \_\_\_\_\_ 2021*

Minutes No. \_\_\_\_ of " \_\_\_\_ " \_\_\_\_\_ 20 \_\_\_\_

Head of the Department: Professor Tarasenko O.M.

Examiner: \_\_\_\_\_

### 4.4 Ensuring the educational process

Lectures are provided with technical support:

- computer
- projection screen
- multimedia projector
- presentation materials (lectures)

Practical exercises:

- Mannequin simulator "Maxim-3"
- Simulators in \ venous injections, bladder catheterization, blood pressure measurement.
- Clinical base, at the patient's bedside.

## 5. Final control

### List of questions of final control (exam)

1. anatomic-functional information about the cecum and appendicular appendix.
2. Methods of examination of patients with acute appendicitis.
3. Clinic of acute appendicitis.
4. etiology and pathogenesis of acute appendicitis.
5. Differential diagnosis of acute appendicitis.
6. Features of the clinical course of acute appendicitis in children.
7. Features of the clinical course of acute appendicitis in pregnant women.
8. Peculiarities of the clinical course of acute appendicitis in elderly and senile patients.
9. Complications of acute appendicitis.
10. Appendicular infiltrates (clinic, diagnostics, treatment tactics).
11. appendicular abscess of the right iliac area (clinic, diagnosis, treatment tactics).
12. pelvic abscess. Clinic, diagnosis, treatment tactics.
13. Piddiaphragmatic abscess. Clinic, diagnosis, treatment tactics.
14. Pelephlebitis. Clinic, diagnosis, treatment tactics.
15. Roselytic appendicular peritonitis. Clinic, diagnosis, treatment tactics.
16. Technique of a typical appendectomy.
17. Laparoscopic appendectomy.
18. Peculiarities of the operative technique depending on the form of acute appendicitis and location of the appendix.
19. Type of access and volume of surgical intervention for various complications of acute appendicitis.
20. Complications when performing appendectomy.
21. Appendectomy complications in the early and late postoperative period.
22. Management of postoperative period in patients with appendicitis and its complications.
23. Anatomic-functional information about gallbladder and extrahepatic bile ducts.
24. Etiology and pathogenesis of acute cholecystitis.
25. Classification of acute cholecystitis.
26. Methods of examination of patients with acute cholecystitis.
27. Typical clinical picture of acute cholecystitis, its peculiarities among young and old people.
28. Differential diagnosis of acute cholecystitis.
29. Diagnostic program in acute cholecystitis.
30. Treatment program of acute cholecystitis.
31. Acute cholecystitis complications.
32. Peculiarities of clinical picture of acute cholecystitis in the presence of concomitant pathology.
33. Clinical picture of acute cholecystitis complications and their differential diagnosis.
34. Indications for emergency surgery in acute cholecystitis.
35. Indication for urgent operations (24-48 hours) in acute cholecystitis.
36. Nature of surgical interventions in acute cholecystitis.
37. Nature of surgical interventions for complications of acute cholecystitis.
38. Indications for minimally invasive surgical interventions (endoscopic, laparoscopic, CT- and ultrasound-controlled).
39. Intraoperative complications of cholecystectomy and their treatment.
40. Postoperative complications and their prevention and treatment.
41. Preoperative preparation of patients with acute cholecystitis.
42. Postoperative management of patients with acute cholecystitis.
43. Anatomical and functional information about the pancreas.
44. Etiology and pathogenesis of acute pancreatitis.
45. Classification of acute pancreatitis.
46. Methods of examination of patients with acute pancreatitis.

47. Typical clinical picture of acute pancreatitis.
48. Differential diagnosis of acute pancreatitis.
49. Diagnostic program in acute pancreatitis.
50. Treatment tactics in acute pancreatitis.
51. Acute pancreatitis complications.
52. Peculiarities of clinical picture of acute pancreatitis in the presence of accompanying pathology.
53. Clinical picture of complications of acute pancreatitis and their differential diagnosis .
54. Indications for surgery in acute pancreatitis.
55. Nature of surgical interventions in acute pancreatitis.
56. Nature of surgical interventions for complications of acute pancreatitis.
57. Indications for minimally invasive surgical interventions (endoscopic, laparoscopic, ultrasound-guided) in acute pancreatitis.
58. Treatment of patients with acute pancreatitis in the postoperative period.
59. Anatomic-functional information about the stomach and duodenum.
60. Modern definitions and methods of diagnosis of peptic ulcer of the stomach and duodenum.
61. What are the aggressive factors in the development of peptic ulcer disease?
62. What are the protective factors of the gastric mucosa?
63. What are the anatomical zones of the stomach?
64. Which arteries supply blood to the stomach?
65. What effect does the vagus nerve have on the stomach?
66. What effect does sympathetic innervation have on the stomach?
67. What are the complications of peptic ulcer disease of the stomach and duodenum?
68. What are the peculiarities of pain syndrome in gastric ulcer localization?
69. What are the features of pain syndrome in duodenal ulcer localization?
70. What are the objective clinical signs of gastric and duodenal ulcer?
71. What is the essence of the diagnostic program for gastric and duodenal ulcer?
72. With which diseases should differential diagnosis of gastric and duodenal ulcer be made?
73. Methods of examination of patients with perforative ulcer.
74. Classification of perforating ulcer.
75. Etiology and pathogenesis of perforative ulcer.
76. Clinic of a typical perforative ulcer.
77. Differential diagnosis of perforative ulcer.
78. Peculiarities clinical course of atypical perforative ulcer.
79. Peculiarities of clinical course of covered perforative ulcer.
80. Peculiarities of the clinical course of perforative ulcer with perforation into the omental sac.
81. Peculiarities of the course of perforative ulcer at its rupture into the retroperitoneal space.
82. Selection of the volume of surgical intervention for perforative ulcer.
83. Technique of stitching a perforated ulcer.
84. Technique of pyloroduodenoplasty.
85. Selection of the method of vagotomy and pyloroduodenoplasty.
86. Indications for and technique of selective vagotomy and antrumectomy.
87. Indications for and technique of selective proximal vagotomy and pyloroduodenoplasty.
88. Indications for and technique of gastric resection for perforative ulcer.
89. Laparoscopic techniques in the surgical treatment of perforated ulcer.
90. Complications in the early postoperative period when performing surgical interventions for perforated ulcer.
91. Complications in the late postoperative period when performing surgical interventions for perforated ulcer.
92. Treatment of complications in the late postoperative period when performing surgical interventions for perforated ulcer.
93. Peculiarities of the management of patients with perforative ulcer in the early and late postoperative period.

94. Complications in the late postoperative period when performing surgical interventions for perforated ulcer.
95. What are the complaints of patients with an obstruction at the level of the exit gastric tract?
96. What are the complaints of patients with an obstruction in the distal duodenum?
97. Give definitions of pyloroduodenal stenosis.
98. What are the causes of pyloroduodenal stenosis?
99. What is the classification of pyloroduodenal stenosis?
100. What complaints are observed in subcompensated stenosis?
101. What are the complaints of compensated stenosis?
102. What complaints are observed in decompensated stenosis?
103. What are the objective clinical signs of subcompensated and decompensated pyloroduodenal stenosis?
104. Radiological signs of the degree of pyloroduodenal stenosis.
105. What are the principles of treatment of pyloroduodenal stenosis?
106. What are the indications for surgical treatment of gastric and duodenal ulcers?
107. What surgical techniques should be considered for localization of a duodenal ulcer?
108. What surgical techniques should be considered for localized gastric ulcers?
109. Definition of anastomosis ulceration.
110. What are the causes of anastomosis ulcers?
111. What are the complaints of patients with peptic anastomosis ulcer?
112. What are the objective clinical signs of a peptic anastomosis ulcer?
113. What is the nature of the diagnostic program for peptic anastomosis ulcer?
114. With which diseases should a peptic anastomosis ulcer be diagnosed?
115. What drug treatment is used for peptic ulcer of anastomosis?
116. What is the extent of surgical intervention for peptic anastomosis ulcer?
117. Give a definition of Mallory-Weiss syndrome.
118. What are the complaints of patients with Mallory-Weiss syndrome?
119. What are the objective manifestations of Mallory-Weiss syndrome?
120. What research methods are used to clarify the diagnosis of Mallory-Weiss syndrome?
121. With which diseases should the differential diagnosis of Mallory-Weiss syndrome be made?
122. Treatment tactics in Mallory-Weiss syndrome.
123. What are the indications for surgical treatment of Mallory-Weiss syndrome?
124. Etiology and pathogenesis of gastrointestinal bleeding.
125. Methods of examination of patients with gastrointestinal bleeding.
126. Classification of ulcerative bleeding.
127. Clinic of gastrointestinal bleeding.
128. Differential diagnosis of ulcerative bleeding.
129. Peculiarities of the course of gastroduodenal ulcer bleeding depending on the degree of its activity.
130. Features of the clinical course of active bleeding.
131. Peculiarities of the clinical course of ulcerative bleeding that has stopped.
132. Technique for closing an ulcer that is bleeding.
133. Choice of the method of stopping bleeding depending on the degree of its activity.
134. Indications for conservative treatment of ulcerative bleeding.
135. Therapy of gastrointestinal bleeding.
136. Methods of endoscopic hemostasis and indications for their use.
137. Methods of operative interventions for ulcerative bleeding.
138. The choice of surgical intervention method depending on the patient's condition, the intensity of bleeding, the degree of blood loss, ulcer localization.
139. Peculiarities of surgical techniques for ulcerative bleeding.
140. Complications in the early postoperative period when performing surgical interventions for ulcer bleeding.

141. Treatment of complications in the early postoperative period when performing surgical interventions for ulcerous bleeding.
142. Peculiarities of management of patients with peptic ulcer bleeding in early and late postoperative period.
143. Anatomical and physiological information about the small intestine and large intestine.
144. Definition of bowel obstruction.
145. Etiology of intestinal obstruction.
146. Current issues of pathogenesis of intestinal obstruction.
147. Classification of intestinal obstruction.
148. Causes of dynamic bowel obstruction.
149. Clinic of dynamic bowel obstruction.
150. Treatment of dynamic (functional) intestinal obstruction.
151. Types of mechanical bowel obstruction.
152. Clinic of obstructed bowel obstruction.
153. Peculiarities of the clinic of strangulated intestinal obstruction.
154. Peculiarities of the clinical picture of the spigot of certain organs of the digestive tract.
155. Peculiarities of intussusception clinic.
156. Types of intussusception.
157. Peculiarities of treatment tactics depending on the time of the disease onset.
158. adhesions.
159. Etiology of adhesion disease.
160. Modern aspects of the pathogenesis of adhesion disease.
161. Typical clinical picture of adhesions.
162. Differential diagnosis of intestinal obstruction.
163. Differential diagnosis of individual types of intestinal obstruction.
164. Modern methods of diagnostics of acute intestinal obstruction.
165. Radiological signs of acute intestinal obstruction.
166. Ultrasonographic signs of acute intestinal obstruction.
167. A modern treatment program for intestinal obstruction.
168. Preoperative preparation of patients with acute intestinal obstruction.
169. Choice of the nature of surgical intervention for different types and levels of bowel obstruction.
170. Postoperative treatment program.
171. Prevention and prognosis in patients with acute bowel obstruction.
172. Anatomico-functional information about the parietal and visceral peritoneum.
173. Etiology and pathogenesis of acute peritonitis.
174. Classification of acute peritonitis.
175. Methods of examination of patients with acute peritonitis.
176. Clinical picture of local acute peritonitis.
177. Clinical picture of widespread peritonitis.
178. Differential diagnosis of acute peritonitis.
179. Diagnostic program in a patient with acute peritonitis.
180. Treatment tactics in a patient with acute local peritonitis.
181. Treatment tactics in a patient with acute widespread peritonitis.
182. Complications of acute peritonitis.
183. Peculiarities of the clinical picture of acute peritonitis with concomitant pathology.
184. Therapeutic tactics in acute peritonitis.
185. Peculiarities of preoperative preparation in gonoronic peritonitis.
186. Methods of operative interventions in peritonitis depending on the spread of inflammatory process in the abdominal cavity.
187. Indications for minimally invasive treatment of patients with acute peritonitis.
188. Stages of surgical intervention in acute disseminated peritonitis.
189. Postoperative complications in acute peritonitis diagnosis, prevention and treatment.
190. Management of patients in the postoperative period.

191. Abdominal compartment syndrome. Definition, causes of occurrence. Diagnosis and treatment tactics.
192. Relaparotomy and laparostomy in the treatment of disseminated peritonitis.
193. Definition of hernia.
194. Causes of hernias.
195. General symptomatology of hernias.
196. Significance of hernia shape and size for the course of the disease.
197. Classification of external abdominal wall hernias.
198. Complications of hernias. Definition, diagnosis and treatment.
199. hernias of the white line of abdomen. Clinic, classification, diagnosis, differential diagnosis, treatment.
200. Umbilical hernia. Clinic, classification, diagnosis, differential diagnosis, treatment.
201. Oblique inguinal hernia. Clinic, classification, diagnosis, differential diagnosis, treatment.
202. Direct inguinal hernia. Clinic, classification, diagnosis, differential diagnosis, treatment.
203. Postoperative hernias. Clinic, classification, diagnosis, differential diagnosis, treatment.
204. Femoral hernia. Clinic, classification, diagnosis, differential diagnosis, treatment.
205. Impinged hernia. Typical clinic. Clinical types of impinged hernia. Diagnosis, differential diagnosis.
206. Surgical tactics for impinged hernia.
207. Peculiarities of surgical intervention for impinged hernia.
208. Signs of viability and non-viability of the intestine.
209. Inflammation of a hernia. Clinic. Differential diagnostics. Surgical tactics.
210. Damage (trauma) to the hernia. Clinic. Surgical tactics.
211. Intestinal obstruction in a hernia. Surgical tactics.
212. irregular hernia. Clinic, diagnosis, differential diagnosis. Treatment.
213. Modern principles and methods of surgical treatment of hernias.
214. Internal hernias. Clinic. Classification. Diagnostics.
215. hernias of the esophageal orifice of the diaphragm. Clinic. Diagnostics. Differential diagnostics.
216. What are the causes of development of esophageal hernia of the diaphragm?
217. What is the mechanism of development of esophageal hernia of the diaphragm?
218. What are the types of esophageal hernia of the diaphragm?
219. What are the complaints of patients with esophageal hernia of the diaphragm?
220. What are the objective manifestations of esophageal hernia of the diaphragm?
221. What complications can occur with esophageal hernia of the diaphragm?
222. Diagnostic program for esophageal hernia of the diaphragm.
223. With what diseases should the differential diagnosis be made in case of esophageal hernia of the diaphragm?
224. What is the conservative treatment of esophageal hernia of the diaphragm?
225. What are the indications for surgical treatment of esophageal hernia of the diaphragm?
226. Essence of surgical interventions for esophageal hernia of the diaphragm.
227. Temporary disability and rehabilitation of patients with esophageal hernia of the diaphragm.
228. Prevention and prognosis in patients with esophageal hernia of the diaphragm.
229. nonspecific ulcerative colitis. Clinic, classification, diagnosis, differential diagnosis, treatment.
230. Crohn's disease. Clinic, classification, diagnosis, differential diagnosis, treatment.
231. Etiology, pathogenesis of colonic diverticular disease.
232. Clinic, methods of investigation, differential diagnosis of diverticular disease of the colon.
233. Complications of diverticular disease of the colon. Conservative and surgical treatment.
234. Classification, diagnosis and treatment of polyps and polyposis of the colon.
235. Intestinal transplantation. Classification of diseases requiring intestinal transplantation. Technique of intestinal transplantation.



236. Mechanical jaundice. Causes of occurrence. Differential diagnostics. Therapeutic tactics.
237. Liver cysts. Classification. Diagnosis, treatment.
238. Cirrhosis and fibrosis of the liver. Portal hypertension syndrome. Classification. Complications. Diagnosis and treatment.
239. Liver transplantation. Indications and contraindications for liver transplantation. The method of donor selection. The methods of liver transplantation. Conditions of donor liver storage and transportation.
240. Etiology, pathogenesis and classification of chronic pancreatitis.
241. Clinical course and diagnostic methods of chronic pancreatitis.
242. Differential diagnosis of chronic pancreatitis.
243. Conservative and surgical treatment of chronic pancreatitis.
244. Complications of chronic pancreatitis. Clinic. Diagnostics. Differential diagnostics. The treatment.
245. Cysts and fistulas of the pancreas. Classification. Clinic. Diagnostics.
246. Complications of pancreatic cysts (suppuration, perforation, bleeding, malignization). The principles of surgical tactics.
247. Indications for pancreas transplantation and their justification. Methodology of pancreas transplantation.
248. Diseases of the spleen. Diagnosis and treatment tactics.
249. Surgical tactics in complicated forms of infectious and parasitic diseases of the small intestine.
250. Chronic ischemia of the lower extremities Obliterating atherosclerosis, obliterating endarteritis, Raynaud's disease, Takayasu disease. Causes, pathogenesis of chronic ischemia by level of occlusion of aorta and limb arteries. Clinic, diagnosis, differential diagnosis, treatment.
251. Diabetic foot syndrome: causes, pathogenesis.
252. Clinical manifestations, variants of clinical course, complications. Diagnosis, differential diagnosis. Conservative and surgical treatment of diabetic angiopathy.
253. Acute limb ischemia syndrome. Causes: arterial thrombosis and embolism, limb trauma, compartment syndrome.
254. Classification of acute limb ischemia syndrome. Clinic, variants of the clinical course, complications. Diagnosis, first aid, treatment tactics.
256. Chronic venous insufficiency syndrome. Varicose veins of the lower extremities, primary and secondary varicose veins.
257. Causes, pathogenesis, clinic, diagnosis, complications. Methods of surgical treatment.
258. Thrombosis and thrombophlebitis of superficial and deep main veins of the limbs. Causes, pathogenesis, clinic, diagnosis, complications. Conservative and surgical treatment.
259. Postthrombophlebitis syndrome. Etiopathogenesis, classification. Clinic. Diagnosis, differential diagnosis.
260. Conservative and methods of surgical treatment. Trophic ulceration as a complication of varicose vein disease: causes, pathogenesis, clinic, methods of treatment. Limb lymphedema. Causes, pathogenesis, clinic.

## **6. Assessment criteria and means of diagnostics of learning outcomes**

### **methods of control**

- Questioning (testing of theoretical knowledge and practical skills).
- Test control.

**Current control.** Check in practical classes of theoretical knowledge and assimilation of practical skills, as well as the results of independent work of students. Supervised by teachers in accordance with the specific objectives of the curriculum. Assessment of the level of training of students is carried out by: questioning students, solving and analysis of situational tasks and test

tasks, interpretation of the results of clinical and instrumental and clinical and laboratory research, control of mastering of practical skills.

**Intermediate control.** Verification of students' ability to use for clinical-diagnostic analysis received theoretical knowledge and practical skills on all studied topics, as well as the results of students' independent work. It is carried out at the last class of the section by passing the practical skills, solving situational tasks and testing.

**The final control** is carried out on completion of all block topics at the last control session of the block.

**The final control work (FCW)** is carried out at the end of all semester topics at the last control session of the semester.

The final control after Unit 2 is included in SCD #1 (for the fall semester), and the final control after Unit 4 is combined with SCD #2 (for the spring semester).

The students who attended all lectures and classes as prescribed by the curriculum, completed the self-study in full and collected a score of not less than the minimum 70 points in the fall semester and 40 points in the spring semester, are allowed to have a professional course.

In order to assess the learning outcomes of the whole academic discipline, a final control is conducted in the form of an exam, which is recommended for academic disciplines, is a component of integrated test examinations EBCI and Croc-2. Only students who have been assigned both PKR in the discipline are allowed to take the exam.

### **Distribution of points awarded to students**

The maximum number of points for the student's current learning activities in the fall semester (in the first and second block) is 120. In this semester there are 17 current practical lessons (18th practical lesson is devoted to PKR № 1). Accordingly, in the fall semester the maximum score for each class is 120 points: 17 classes = 7 points. The minimum grade for each session is 70 points: 17 sessions = 4.1 points. A grade below 4.1 means "unsatisfactory", the class is not assigned and is to be worked out in the prescribed manner.

On PKR No. 1 a student can receive a maximum of 80 points. The PKR is considered enrolled if a student receives at least 50 points.

**In the spring semester**(In the third and fourth block), the maximum number of points for a student's current learning activities is 80 In this semester, there are 16 current practical sessions (the 17th practical session is assigned to PKR #2). Accordingly, the maximum grade for each practical session is 80 points: 16 sessions = 5 points. The minimum grade for each lesson is 40 points: 16 lessons = 2.5 points. A grade lower than 2.5 means "unsatisfactory", the lesson is not assigned and must be worked out in the prescribed manner.

On PKR No. 2 a student can receive a maximum of 40 points. The PKR is considered enrolled if a student receives at least 30 points.

A student may receive a maximum of 80 points in the examination. A student is considered to have passed the exam if he/she scores at least 50 points. For the allocation of points in the examination, see the example of the examination ticket above.

### Assessment of student performance

| Type of activity (tasks)                             | Maximum number of points |
|--|--------------------------|
| <b>Fall semester (blocks 1-2)</b>                    |                          |
| Practical sessions from the 1st to the 17th          | 7                        |
| Together in 17 sessions                              | 120                      |
| Final control work No. 1 (practical exercise No. 18) | 80                       |
| Together for the fall semester.                      | 200                      |
| <b>Spring semester (blocks 3-4)</b>                  |                          |
| Practical sessions from the 19th to the 34th         | 5                        |
| Together in 16 sessions                              | 80                       |
| Final control work No. 2 (Practical lesson No. 35)   | 40                       |
| Together for spring semester.                        | 120                      |
| exam   | 80                       |
| Together for spring semester and exam                | 200                      |

### evaluation criteria

Students' knowledge is assessed from both theoretical and practical training according to the following criteria:

**A grade of 6.1-7 in the fall semester (4.1-5 in the spring semester), 71-80 in the PKR in the fall semester (38-40 in the spring semester) and 71-80 in the exam (A on ECTS scale and 5 on national scale)** a student is **scored** if she demonstrates profound knowledge of all theoretical statements and the ability to apply theoretical material for practical analysis and has no inaccuracies.

**A grade of 5.1-6 in fall semester (3.1-4 in spring semester), 61-70 in PKR in fall semester (35-37 in PKR in spring semester), and 61-70 in exam ( B and C on ECTS scale and 4 on national scale)** is awarded if it shows knowledge of all theoretical statements, ability to apply them in practice, but some principal inaccuracies are allowed.

**A grade of 4.1-5 in the fall semester (2.5-3 in the spring semester), 50-60 in the PCR in the fall semester (30-34 in the spring semester), and 50-60 in the exam ( D and E on ECTS scale and 3 on national scale)** is awarded, provided the student knows the main theoretical points and can use them in practice.

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