MINISTRY OF HEALTH OF UKRAINE

ODESSA NATIONAL MEDICAL UNIVERSITY

Department of Human Anatomy

APPROVED
Vice-Rector of Scientific and Pedagogical Work

_____ Eduard BURIACHKIVSKYI

01 September 2023

WORK PROGRAM OF THE DISCIPLINE

Clinical Anatomy and Operative Surgery

Level of higher education: second (master's)

Field of knowledge: 22 «Health care»

Specialty: 222 Medicine

Educational and professional program: Medicine

2023

The program is based on the educational and professional program "Medicine", training of specialists of the second (master's) level of higher education in the specialty 222 "Medicine" of the field of knowledge 22 "Health Care", approved by the Academic Council of ONMedU (Protocol No. 8 of June 29, 2023).

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The work program was approved at a meeting of the Department of Normal and Pathological Clinical Anatomy Protocol № 1 dated 29.08.2023

Head of the Department _____ Olena APPELHANS

Agreed with the guarantor of EPP _____ Valeria MARICHEREDA

Approved at the Subject Cyclic Methodical Commission on Medical-Biological Disciplines of ONMedU
Protocol № 1 dd 29.08.2023

Head of Subject Cycle Methodical Commission on Medical and Biological

Disciplines _____ Leonid GODLEVSKY

Revised and approved at a meeting of the Department _____

Protocol No ___ of "___" ____ 20__ p.

Head of the Department _____ _____
(Signature) *(First Name, Last Name)*

Reviwed and approved at a meeting of the Department _____

Protocol No ___ of "___" ____ 20__ p.

Head of the Department _____ _____
(Signature) *(First Name, Last Name)*

1. Description of the discipline:

Name of indicators	Field of study, speciality, specialisation, level of higher education	Characteristics of the discipline
General amount:	Brunch of knowledge	Full-time form of study
	22 "Health care"	Mandatory discipline
Credits: 3		Year of study: 2, 3
	Speciality	Semesters: IV, V
Hours: 90	222 "Medicine"	Lectures (12 hours)
		Seminars (0 hours)
Content modules: 6	Level of higher education	Practical lessons (48 hours)
	second (master's) degree	Laboratory classes (0 hours)
		Independent students work (30 hours) including individual work (0 hours)
		Form of final control - differential test

2. Aim and objectives of the discipline, competences, programme learning results

Aim: Acquisition by each student of higher medical education of specific knowledge of clinical anatomy necessary to substantiate a clinical diagnosis, understand the pathogenesis of various diseases, the development of possible complications to choose of the most rational methods of surgical intervention, mastering the techniques and skills of surgical interventions.

Objectives:

- formation of knowledge of clinical anatomy of body regions;
- ability to interpret topographic and anatomical relationships from the standpoint of variational and age-related clinical anatomy;
- formation of skills to apply knowledge of clinical anatomy to substantiate the diagnosis and understand the pathogenesis of various pathological processes;
- formation of skills to choose the most rational methods of surgical intervention;
- mastery of the technique of performing basic surgical interventions on cadaver and simulators.

The process of studying the discipline is aimed at forming elements of the following competencies:

Integral competence (IC):

The ability to solve typical and complex problems, including research and innovation in the medicine. Ability to continue learning with a high degree of autonomy.

General competences (GC):

GC1 Ability to think abstractly, analyse and synthesise.
GC2 Ability to learn and master modern knowledge.
GC4 Knowledge and understanding of the subject area and understanding of professional activities.
GC11 Ability to search, selection and analyse information from various sources.

Special (professional) competences (SC)

SC10. Ability to perform medical procedures.
SC23. Ability to develop and implement scientific and applied projects in the field of health care.
SC25.Observance of professional and academic integrity, responsibility for the accuracy of scientific results.
SC28. Ability to apply fundamental biomedical knowledge at a level sufficient to perform professional tasks in the field of health care.

Programme learning results (PLR):
PLR1. Have a thorough knowledge of the structure of professional activity. Be able to carry out professional activities that require updating and integrating knowledge. To be responsible for professional development, the ability to further professional learning with a high level of autonomy.
PLR2. Understanding and knowledge of basic and clinical biomedical sciences at a level sufficient to solve professional problems in the field of health care.
PLR3. Specialised conceptual knowledge that includes scientific achievements in the field of health care and is the basis for research, critical thinking of problems in the field of medicine and related interdisciplinary problems.
PLR21. Search for necessary information in professional literature and databases of other sources, analyse, evaluate and apply this information.

As a result of studying the discipline, the student must:
Know:
- the general principle of the layered structure of the human body;
- clinical anatomy of regions of the human body;
- clinical anatomy of internal organs of the human body;
- clinical anatomy of cellular spaces, neurovascular bundles;
- age-related and individual features of the structure, shape, topography of internal organs and other anatomical formations;
- technique of using surgical instruments;
- geneal stages of instrumental interventions and manipulations.

Be able to:
- demonstrate and describe the clinical anatomy of human body regions, internal organs, fatty cellular spaces, neurovascular bundles;
- use knowledge of clinical anatomy to justify the anatomical features of the patient's body in various pathological conditions;
- use general surgical instruments;
- justify the choice of technique of instrumental interventions based on knowledge of clinical anatomy;
- make basic manipulations performed in practical surgery and internal medicine on cadaveric material and simulators.

Master the skills:

Perform medical manipulations according to the "List of practical skills and abilities to be mastered".

3. Content of the discipline

Module 1: Clinical anatomy and operative surgery of the head.

Specific objectives:
- know the basic concepts of the subject, its objectives and research methods;
- know the clinical anatomy of the cerebral and facial parts of the head: boundaries of the regions, peculiarities of the anatomical structure of the calvaria and skull base, layered structure of each of the areas of the cerebral and facial parts of the head, projections of the main vascular and nerve bundles, three levels of the venous system of the head and their practical significance, cellular spaces of the head and localisation of possible purulent processes and haematomas, structure of the brain meninges and intermeningeal spaces, topography of the parotid gland, facial nerve and branches of the trigeminal nerve;
- be able to determine the boundaries of the deep region of the face, interfascial cellular spaces, topography of the pterygoid venous plexus and its connection with the veins of neighbouring regions;
- be able to determine the types of craniocerebral wounds and perform debridement of the short wound, be able to perform final bleeding control from all venous levels of the head.
- know the stages of cranial trepanation, maxillary and frontal sinus opening, antrotomy.
- now and be able to use general surgical instruments and special surgical instruments for cranial trepanation and facial operations;
- know the possible locations of phlegmons on the facial region of the head and the anatomical basis for incisions in case of purulent and inflammatory processes on the face.

Topic 1. Introduction to the discipline. General surgical instruments. Technique of dissection and connection of tissues. Types of surgical sutures and knots.
Topic 2. Clinical anatomy of the cerebral region of the head. Regions, layered structure. Features of blood supply and venous drainage.
Topic 3. Clinical anatomy of the facial part of the head. Regions, layered structure. Features of blood supply and venous drainage.
Topic 4. Surgical interventions on the head: debridement of the short head wounds, skull trepanation, antrotomy. Rational incisions on the face. Opening of frontal and maxillary sinuses.

Module 2. Clinical anatomy and operative surgery of the neck.

Specific objectives:

- Identify external landmarks of the neck, boundaries of neck regions, triangles;
- know the fasciae of the neck and interfascial fatty cellular spaces;
- understand the layered structure of each of the triangles of the neck;
- know the clinical significance of the carotid triangle, its contents and layered structure;
- understand the topographo-anatomical structure of the neck organs (larynx, trachea, pharynx, cervical part of esophagus, thyroid and parathyroid glands;
- be able to perform layer-by-layer preparation in limits of different regions and orient in the topographic relationships of the anatomical formations of the neck;
- be able to justify the choice of surgical intervention in case of asphyxia;
- know the technique and be able to perform upper, middle and lower tracheotomy;
- master the techniques of conicotomy;
- orient in technique of opening and ligating the main vessels of the neck;
- understand the technique of performing of vagosympathetic blockade;
- orient in technique of thyroid gland resection;
- be able to use special surgical instruments for neck surgery.

Topic 5. Clinical anatomy of the neck. Regions, triangles. Neck fasciae and interfascial spaces. Carotid triangle, its contents and clinical significance. Clinical anatomy of the neck organs.

Topic 6: Surgical interventions for asphyxia - conicotomy, cricotomy, tracheotomy. Resection of thyroid gland according to O.V. Nikolaev. Operations on the vessels of the neck.
Topic 7. Summary lesson on clinical anatomy and operative surgery of the head and neck.

Module 3: Clinical anatomy and surgical surgery of the chest.

Specific objectives:
- be able to determine the borders of the chest, draw projectional lines on the wall of chest;
- orient in layers of the chest wall, know the topography of intercostal spaces and the neurovascular bundles of the intercostal space;
- topography of the breast, its structure and variants of surgical interventions for purulent and oncological diseases;
- be able to determine the boundaries of the thoracic cavity, pleura and lungs;
- topographo-anatomical and clinical characteristics of pleural sinuses, lung lobes and segments;
- understand the relationship between the elements of the root of lung;
- be able to perform layer-by-layer preparation in limits of the areas and orient in the topographic relationships of the anatomical formations of the chest;
- be able to perform a pleural puncture;
- be able to describe different types of pneumothorax and choose methods of removal;
- be able to define the mediastinum, its boundaries and compartments;
- know the clinical anatomy of the anterior and posterior mediastinum;
- orient in congenital and acquired heart defects (botal duct nonunion, coarctation of the aorta, pulmonary artery stenosis, atrial septal defects, Fallot's tetrad);
- know and be able to choose operative access to the lungs and heart;
- orient in technique of operations for congenital heart disease;
- orient in technique of coronary artery bypass, stenting and heart transplantation.

Topic 8. Clinical anatomy of the chest. Topography of intercostal spaces. The diaphragm. The mammary gland. Clinical anatomy of the pleura, pleural sinuses, lungs, trachea, bronchi.
Topic 9. Clinical anatomy of the mediastinum. Clinical anatomy of the heart, pericardium. Functional anatomy of heart valves. Thymus. The oesophagus. Great vessels and nerves of the mediastinum.
Topic 10. Puncture of the pleural cavity. Types of pneumothorax, surgical intervention to remove them. Surgical access to organs of the chest cavity. Operations in case of coronary circulation failure.

Module 4. Clinical anatomy and operative surgery of the anterolateral abdominal wall and abdominal organs, lumbar region and retroperitoneal space.

Specific objectives:
-determine the boundaries of the abdomen, abdominal and peritoneal cavity, retroperitoneal space;
- know the boundaries of the anterolateral abdominal wall, division into regions;
- determine the projection of the abdominal organs on anterolateral abdominal wall;
- know the layered structure of the anterolateral abdominal wall, blood supply and innervation;
- be able to perform a layer-by-layer preparation of the lateral and anterior parts of the abdominal wall and orient in the topographic relationships of anatomical formations;
- know the surgical anatomy of the inguinal and femoral canal;
- know the classification of herniae;
- know the difference between congenital and acquired herniae;
- know the difference in surgical technique of herniotomy for strangulated and non-strangulated herniae;
- know the stages of herniotomy and types of plastic repair of inguinal, umbilical, femoral herniae;
- justify the surgical and physiological characteristics of surgical accesses to the abdominal organs;

-perform longitudinal (median, paramedian, transrectal, pararectal), oblique, transverse and combined accesses (incisions) to the abdominal organs;
- orient in types of intestinal sutures and to master the technique of their application;
- orient in the storeys of the abdominal cavity, their contents; know the projection of the abdominal organs on the anterolateral abdominal wall and be able to choose a rational surgical access to them;
- know the structure and clinical anatomy of the organs of the upper abdominal cavity: liver, gallbladder, stomach, duodenum, spleen; their blood supply and innervation;
- know the surgical accesses to the organs of the upper abdominal cavity and the stages of gastrostomy, gastroenterostomy, gastric resection, vagotomy, cholecystectomy, choledochotomy; understand the principles of splenectomy and surgical interventions on the pancreas;
- know the structure and clinical anatomy of organs and peritoneal formations of the lower abdominal cavity - small and large intestine, mesenteric sinuses;
- know the anatomical connection between upper and lower storeys of the abdominal cavity, to be able to justify the ways of spreading purulent processes in the abdominal cavity;
- know the surgical accesses to the organs of lower storey and the sequence of fulfilment of appendectomy, faecal fistula and artificial anus;
- be able to use special surgical instruments for abdominal surgery;
- know the boundaries of the lumbar region, the layered structure of the medial and lateral regions, blood supply and innervation, weak places;
- be able to determine the boundaries of the retroperitoneal space, fatty cellular spaces and fasciae;
- know the location and topography of retroperitoneal organs: kidneys, adrenal glands, ureters, great vessels and nerves. Know their anatomical structure, blood supply and innervation;
-explain the choice of surgical accesses to the kidneys and the technique of nephrectomy, pyelotomy, nephrotomy.

Topic 11. Clinical anatomy of the anterolateral abdominal wall. Regions, layers, "weak places". The inguinal canal. The femoral canal. Umbilical region and linea alba of the abdomen. Surgical accesses to the abdominal organs (laparotomy).
Topic 12. The determination and classification of abdominal hernias. Surgical anatomy and surgical repair of inguinal, femoral, umbilical hernias. Hernia of linea alba abdominis.

Topic 13. Abdominal cavity, storeys. Clinical anatomy of the peritoneum and peritoneal formation – lesser sac, greater sac, recesses, paracolic gutters, mesentery sinuses.

Topic 14. Structure of the wall of the gastrointestinal tract. Clinical anatomy of the stomach, duodenum. Intestinal sutures. Resection of the stomach. Gastrostomy. Vagotomy.

Topic 15. Clinical anatomy of the liver and biliary tracts. Cholecystectomy. Clinical anatomy and operations on the pancreas and spleen.

Topic 16. Clinical anatomy of the small and large intestine. Morphological differences. Appendectomy. Faecal fistula and artificial anus. Functional differences.

Topic 17. Clinical anatomy of the lumbar region and retroperitoneal space. Operations on retroperitoneal organs: pyelotomy, nephrotomy, nephrectomy.

Topic 18. Summary lesson on clinical anatomy and operative surgery of the chest, anterolateral abdominal wall, abdominal cavity and retroperitoneal space.

Module 5: Clinical anatomy and operative pelvic surgery

Specific objectives:
- know the structure of the musculoskeletal base of the pelvis, anatomical and surgical features of the fascia and fatty cellular spaces, pelvic storeys;

- know the topography of the male pelvic organs;

- know the methods of surgical access to the male pelvic organs, know the sequence and technique of surgical interventions on urinary bladder, prostate, testicles and rectum;

- understand the peculiarities of the structure of the female pelvis, describe the features of the fasciae and fatty cellular spaces of the female pelvis;

- know the topography of the uterus with appendages and the concept of the supporting and suspending ligamentous apparatus of the uterus;

- know technique of performing a puncture of the posterior vaginal fornix, surgery for ectopic pregnancy;

- be able to use special surgical instruments for operative interventions on organs of small pelvis.

Topic 19. Clinical anatomy of the male pelvis: bones, muscles, fasciae, fatty cellular spaces, storeys. Surgical anatomy of the male pelvic organs. Operations on the urinaty bladder, testicles, rectum.
Topic 20. Clinical anatomy of the female pelvis. Surgical anatomy of the female pelvic organs. Puncture of the posterior vaginal fornix. Surgery for ectopic pregnancy.

Module 6: Clinical anatomy and operative surgery of the extremities

Specific objectives:
- familiarize with the doctrine about vascular sheaths and the case structure of the limbs;
- identify the boundaries of the parts of upper limb;
- know the layered structure and surgical anatomy of fasciae and fatty cellular spaces, blood supply and innervation of the regions of shoulder girdle and upper arm, elbow, forearm and hand;
- be able to perform layer-by-layer preparation of the regions of upper limb and orient in the topographic relationships of anatomical formations;
- give anatomical justification of the ways of spreading phlegmons and haematoma of the upper extremity;
- know the technique and sequence of operations for purulent diseases of the hand;
- determine the boundaries of the gluteal region, thigh, popliteal fossa, knee, shin and foot;
- know the layered structure and surgical anatomy of fasciae and fatty cellular spaces, blood supply and innervation of the regions of lower limb;
- know the walls and contents of the musculofascial canals of the upper and lower extremities;
-know the vascular and nerve bundles of the extremities, the relationship of their elements and the projection lines of vessels and nerves on the body surface;
- master the operative technique of opening and ligating the great vessels of the extremities, applying vascular sutures and mechanical connection of vessels;
- learn the general principles and techniques of performing basic operations on bones and joints: osteotomy, osteosynthesis, puncture of joints of the upper and lower extremities, joint replacement;
-be able to use special surgical instruments for operative interventions on bones and joints;
- describe the technique and sequence of the stages of limb amputation, methods of treatment of blood vessels, nerves, periosteum and soft tissues during amputation;
- know the stages and technique of performing a three-stage cone-circular amputation according to Pirogov N.I., the technique of bone-plastic amputation of the thigh and lower leg;
- master the general principles and technique of place sutures on nerve.

Topic 21: Clinical anatomy of the upper extremity: layered structure, canals, sulcuses, projections of vessels. Shoulder girdle: subclavian, deltoid, scapular and axillary areas. Upper arm and shoulder joint. Clinical anatomy of the elbow, forearm and hand. Pirogov's space. Operations for purulent diseases opening of the hand.
Topic 22. Clinical anatomy of the gluteal region. Quadrants. Supra- and infrapiriform foramen, their contents. Spread of inflammatory processes from the pelvis to the anterior and posterior

surfaces of the thigh. Femoral, obturator and adductor canals. Clinical anatomy of the thigh, popliteal fossa, knee, shin and foot. Muscles, triangles, fissurae, canals.
Topic 23: Operations on limbs. Osteotomy, osteosynthesis. Amputations. Operative accesses and ligation of great vessels.
Differentiated test.

4. Structure of the discipline

Тема	Lectures	Practical classes	Independent work	Total
Topic 1. Introduction to the discipline. General surgical instruments. Technique of dissection and connection of tissues. Types of surgical sutures and knots.	0,5	2	1	3,5
Topic 2. Clinical anatomy of the cerebral region of the head. Regions, layered structure. Features of blood supply and venous drainage.	0,5	2	1	3,5
Topic 3. Clinical anatomy of the facial part of the head. Areas, layered structure. Features of blood supply and venous drainage.	0,5	2	1	3,5
Topic 4. Surgical interventions on the head: debridement of the short head wounds, skull trepanation, antrotomy. Rational incisions on the face. Opening of frontal and maxillary sinuses.	0,5	2	1	3,5
Topic 5. Clinical anatomy of the neck. Regions, triangles. Neck fasciae and interfascial spaces. Carotid triangle, its contents and clinical significance. Clinical anatomy of the neck organs.	1	2	1	4
Topic 6: Surgical interventions for asphyxia - conicotomy, cricotomy, tracheotomy. Resection of the thyroid gland according to O.V. Nikolaev. Operations on the vessels of the neck.	1	2	1	4
Topic 7. Summary lesson on clinical anatomy and operative surgery of the head and neck.		2	1	3
Topic 8. Clinical anatomy of the chest. Topography of intercostal spaces. The diaphragm. The mammary gland. Clinical anatomy of the pleura, pleural sinuses, lungs, trachea, bronchi.	0,5	2	1	3,5
Topic 9. Clinical anatomy of the mediastinum. Clinical anatomy of the heart, pericardium. Functional anatomy of heart valves. Thymus. The oesophagus. Great vessels and nerves of the mediastinum.	0,5	2	1	3,5

Topic 10. Puncture of the pleural cavity. Types of pneumothorax, surgical intervention to removal. Surgical access to organs of the thoracic cavity. Operations in case of coronary circulation failure.	1	2	1	4
Topic 11. Clinical anatomy of the anterolateral abdominal wall. Regions, layers, "weak places". The inguinal canal. The femoral canal. Umbilical region and linea alba of the abdomen. Surgical accesses to the abdominal organs (laparotomy).		2	1	3
Topic 12. The determination and classification of abdominal herniae. Surgical anatomy and surgical repair of inguinal, femoral, umbilical herniae. Hernia of linea alba abdominis.	0,5	2	1	3.5
Topic 13. Abdominal cavity, its storeys. Clinical anatomy of the peritoneum and peritoneal formations – lesser sac, greater sac, recesses, paracolic gutters, mesentery sinuses.		2	1	3
Topic 14. Structure of the wall of the gastrointestinal tract. Clinical anatomy of the stomach, duodenum. Intestinal sutures. Resection of the stomach. Gastrostomy. Vagotomy.	0,5	2	1	3.5
Topic 15. Clinical anatomy of the liver and biliary tracts. Cholecystectomy. Clinical anatomy and operations on the pancreas and spleen.	0,5	2	1	3.5
Topic 16. Clinical anatomy of the small and large intestine. Morphological differences. Appendectomy. Faecal fistula and artificial anus. Functional differences.	0,5	2	1	3.5
Topic 17. Clinical anatomy of the lumbar region and retroperitoneal space. Operations on retroperitoneal organs: pyelotomy, nephrotomy, nephrectomy.	1	2	1	4
Topic 18. Summary lesson on clinical anatomy and operative surgery of the chest, anterolateral abdominal wall, abdominal cavity and retroperitoneal space.		2	1	3
Topic 19. Clinical anatomy of the male pelvis: bones, muscles, fasciae, fatty cellular spaces, storeys. Surgical anatomy of the male pelvic organs. Operations on the urinaty bladder,	0,5	2	1	3.5

testicles, rectum.				
Topic 20. Clinical anatomy of the female pelvis. Surgical anatomy of the female pelvic organs. Puncture of the posterior vaginal fornix. Surgery for ectopic pregnancy.	0,5	2	1	3.5
Topic 21: Clinical anatomy of the upper extremity: layered structure, canals, sulcuses, projections of vessels. Shoulder girdle: subclavian, deltoid, scapular and axillary areas. Upper arm and shoulder joint. Clinical anatomy of the elbow, forearm and hand. Pirogov's space. Operations for purulent diseases of the hand.	0,5	2	1	3.5
Topic 22. Clinical anatomy of the gluteal region. Quadrants. Supra- and infrapiriform foramen, their contents. Spread of inflammatory processes from the pelvis to the anterior and posterior surfaces of the thigh. Femoral, obturator and adductor canals. Clinical anatomy of the thigh, popliteal fossa, knee, shin and foot. Muscles, triangles, fissurae, canals.	0,5	2	1	3,5
Topic 23: Operations on the limbs. Osteotomy, osteosynthesis. Amputations. Operative accesses and ligation of great vessels.	1	2	2	5
Differentiated test		**2**	**6**	**8**
Total for discipline	**12**	**48**	**30**	**90**

5. Topics of lectures / seminars / practical / laboratory classes

5.1. Topics of lectures

№	Theme	Hours
1.	Introductory lecture. Subject, objectives and history of clinical anatomy and operative surgery. Clinical anatomy and operative surgery of the head.	2
2.	Clinical anatomy and operative surgery of the neck.	2
3.	Clinical anatomy and operative surgery of the chest.	2
4.	Clinical anatomy and operative surgery of the anterolateral abdominal wall and abdominal cavity.	2
5.	Clinical anatomy and operative surgery of the lumbar region, retroperitoneal space and small pelvis.	2
6.	Clinical anatomy and operative surgery of the upper and lower extremities.	2
	Total	**12**

5.2. Topics of practical classes

№	Theme	Hours
	Module 1 **"Clinical anatomy and operative surgery of the head”**	

1.	Introduction to the discipline. General surgical instruments. Technique of dissection and connection of tissues. Types of surgical sutures and knots.	2
2.	Clinical anatomy of the cerebral region of the head. Regions, layered structure. Features of blood supply and venous drainage.	2
3.	Clinical anatomy of the facial part of the head. Areas, layered structure. Features of blood supply and venous drainage.	2
4.	Surgical interventions on the head: debridement of the short head wounds, skull trepanation, antrotomy. Rational incisions on the face. Opening of frontal and maxillary sinuses.	2
Module 2 "Clinical anatomy and operative surgery of the neck"		
5.	Clinical anatomy of the neck. Regions, triangles. Neck fasciae and interfascial spaces. Carotid triangle, contents and clinical significance. Clinical anatomy of the neck organs.	2
6.	Surgical interventions for asphyxia - conicotomy, cricotomy, tracheotomy. Resection of the thyroid gland according to O.V. Nikolaev. Operations on the vessels of the neck.	2
7.	Summary lesson on clinical anatomy and operative surgery of the head and neck.	2
Module 3 "Clinical anatomy and operative surgery of the chest"		
8.	Clinical anatomy of the chest. Topography of intercostal spaces. The diaphragm. The mammary gland. Clinical anatomy of the pleura, pleural sinuses, lungs, trachea, bronchi.	2
9.	Clinical anatomy of the mediastinum. Clinical anatomy of the heart, pericardium. Functional anatomy of heart valves. Thymus. The oesophagus. Great vessels and nerves of the mediastinum.	2
10.	Puncture of the pleural cavity. Types of pneumothorax, surgical intervention for removal. Surgical access to organs of the thoracic cavity. Operations in case of coronary circulation failure.	2
Module 4 "Clinical anatomy and operative surgery of the anterolateral abdominal wall and organs of abdominal cavity, lumbar region and retroperitoneal space"		
11.	Clinical anatomy of the anterolateral abdominal wall. Regions, layers, "weak places". The inguinal canal. The femoral canal. Umbilical region and linea alba of the abdomen. Surgical accesses to the abdominal organs (laparotomy).	2
12.	The determination and classification of abdominal herniae. Surgical anatomy and surgical repair of inguinal, femoral, umbilical herniae. Hernia of linea alba abdominis.	2
13.	Abdominal cavity, storeys. Clinical anatomy of the peritoneum and peritoneal formations – lesser sac, greater sac, recesses, paracolic gutters, mesentery sinuses.	2

14.	Structure of the wall of the gastrointestinal tract. Clinical anatomy of the stomach, duodenum. Intestinal sutures. Resection of the stomach. Gastrostomy. Vagotomy.	2
15.	Clinical anatomy of the liver and biliary tracts. Cholecystectomy. Clinical anatomy and operations on the pancreas and spleen.	2
16.	Clinical anatomy of the small and large intestine. Morphological differences. Appendectomy. Faecal fistula and artificial anus. Functional differences.	2
17.	Clinical anatomy of the lumbar region and retroperitoneal space. Operations on retroperitoneal organs: pyelotomy, nephrotomy, nephrectomy.	2
18.	Summary lesson on clinical anatomy and operative surgery of the chest, anterior abdominal wall, abdominal cavity and retroperitoneal space.	2
Module 5 "Clinical anatomy and operative surgery of small pelvis"		
19.	Clinical anatomy of the male pelvis: bones, muscles, fasciae, fatty cellular spaces, storeys. Surgical anatomy of the male pelvic organs. Operations on the urinaty bladder, testicles, rectum.	2
20.	Clinical anatomy of the female pelvis. Surgical anatomy of the female pelvic organs. Puncture of the posterior vaginal fornix. Surgery for ectopic pregnancy.	2
Module 6 "Clinical anatomy and operative surgery of the extremities"		
21.	Clinical anatomy of the upper extremity: layered structure, canals, sulcuses, projections of vessels. Shoulder girdle: subclavian, deltoid, scapular and axillary areas. Upper arm and shoulder joint. Clinical anatomy of the elbow, forearm and hand. Pirogov's space. Operations for purulent diseases of the hand.	2
22.	Clinical anatomy of the gluteal region. Quadrants. Supra- and infrapiriform foramen, contents. Spread of inflammatory processes from the pelvis to the anterior and posterior surfaces of the thigh. Femoral, obturator and adductor canals. Clinical anatomy of the thigh, popliteal fossa, knee, shin and foot. Muscles, triangles, fissurae, canals.	2
23.	Operations on the limbs. Osteotomy, osteosynthesis. Amputations. Operative accesses and ligation of dreat vessels.	2
	Differentiated test	2
	Total:	**48**

5.3. Topics of seminars

There are no seminars

5.4. Topics of laboratory classes

There are no laboratory classes.

6. Independent work

№	Theme	Hours
1	**Preparation for practical classes** - theoretical preparation and mastering of practical skills	23
2	**Preparation topics that are not included in the plan of practical (auditory) classes**	
2.1	Clinical anatomy of the spine and spinal cord. Lumbar puncture technique. Laminectomy.	1
3.	**Preparing for a differentiated test**	6
	Total	**30**

7. Teaching methods

Lecture classes: comprehension of the presented material and preparation of notes.
Practical classes: answering, explaining, talking, working with a book, solving situational tasks, demonstrating and practicing practical skills according to the list on simulation models and in a special classroom equipped as an operating room, correct use of surgical instruments.
Independent work: theoretical preparation for the next practical lesson, study of basic and additional literature, lecture texts, watching educational videos, solving thematic test, tasks, mastering of practical skills, writing literature reviews, abstracts and presentations on specific topics of the educational material using additional educational and scientific literature, writing protocols of manipulation and operations of fix topics.

8. Methods of control and criteria for evaluating learning outcomes

Current control:
The current control includes oral examination, testing, assessment of practical skills, assessment of communication skills during role play, solving situational clinical tasks, assessment of activity in the classroom.
Final control: differentiated test.

Assessment of current learning activities in practical / seminar / laboratory classes:
Assessment of the success of studying each topic of the discipline "Clinical Anatomy and Operative Surgery" is performed on a traditional 4-point scale. In practical classes, students must be examinated at least once for 2 practical classes, at least 75% of students. At the end of the semester, the number of grades for students in the group should be the same on average.

Criteria for current assessment in the practical lesson:

Mark	Assessment criteria
Excellent «5»	The applicant (student) is fluent in the material, takes an active part in the discussion and solution of a situational clinical problem, confidently demonstrates practical skills, expresses his/her opinion on the topic of the class, demonstrates clinical thinking.
Good «4»	The applicant (student) has a good knowledges of the material, participates in the discussion and solution of a situational clinical problem, demonstrates practical skills with some mistakes, expresses his/her opinion on the topic of the class, demonstrates clinical thinking.
Satisfactorily «3»	The applicant (student) has insufficient knowledge of the material, is uncertain about participating in the discussion and solving a situational clinical problem, demonstrates practical skills with significant mistakes.

Unsatisfactory «2»	The applicant (student) does not know the material, does not participate in the discussion and solution of a situational clinical problem, does not demonstrate practical skills.

Only those applicants who have fulfilled the requirements of the curriculum in the discipline, have no academic debt and their average score for current academic activities in the discipline is at least 3.00 are allowed to take the final control in the form of a differentiated test.

Evaluation of students' learning outcomes during the final control - differentiated test

Content of the activity being evaluated	Number of points
1. Answer 2 (two) theoretical questions on clinical anatomy	2
2. Answer 2 (two) theoretical questions on operative surgery	2
3. Solving a situational problem	1

Criteria for assessing learning outcomes during the final control - differentiated test

Mark	Assessment criteria
Excellent «5»	The student has answered the questions correctly, accurately and fully. The student has a thorough and comprehensive knowledge of the content of theoretical issues, is fluent in professional and scientific terminology. He/she thinks logically and constructs an answer, freely uses the acquired theoretical knowledge in the analysis of practical tasks.
Good «4»	The student has answered the questions sufficiently. He/she has a sufficiently deep and comprehensive knowledge of the content of theoretical issues, knows professional and scientific terminology. He/she thinks logically and constructs an answer, uses the acquired theoretical knowledge in the analysis of practical tasks. However, some questions lack sufficient depth and argumentation, and the candidate makes minor mistakes that are eliminated by the candidate when pointed out by the teacher.
Satisfactorily «3»	The applicant has answered the questions incompletely, the answers to additional and leading questions are vague and vague. Has the basic amount of theoretical knowledge, inaccurately uses professional and scientific terminology. Has significant difficulties in constructing an independent logical answer.
Unsatisfactorily «2»	The applicant answered the main, additional and leading questions. He/she has not mastered the main body of theoretical knowledge, shows a low level of proficiency in professional and scientific terminology. The answers to the questions are fragmentary, inconsistent, illogical, and cannot apply theoretical knowledge in the analysis of practical tasks.

9. Distribution of points received by applicants for higher education

The grade for the discipline consists of 50.0% of the grade for the current performance and 50.0% of the grade for the final test. The average score for the discipline is translated into a national grade and converted into scores on a multi-point scale. Conversion of the traditional grade for the discipline in the 200-point is carried out by the information and computer center of the university program "Contingent".

Table for traditional mark conversion into the multi-point

National assessment for the discipline	The sum of points for the discipline
Excellent («5»)	185 – 200
Good («4»)	151 – 184
Satisfactorily («3»)	120 – 150
Unsatisfactorily («2»)	less 120

Points from the discipline are independently converted into both the ECTS scale and the four-point scale. ECTS scale scores are not converted to a four-point scale and vice versa. Further accounts are carried out by the information and computer center of the university.

According to the points obtained on a 200-point scale, the achievements of applicants are assessed according to the ECTS rating scale. Further ranking according to the ECTS rating scale allows to evaluate the achievements of applicants in the educational component who study in the same course of one speciality, according to the points they received.

The ECTS scale is a relative and comparative rating system that establishes the applicant's belonging to the group of the best or worst among the reference group of fellow students (faculty, speciality). Grade A on the ECTS scale cannot be equal to grade A, and grade B cannot be equal to grade B, etc. When converting from a multi-point scale, the limits of grades "A", "B", "C", "D", "E" on the ECTS scale do not coincide with the limits of grades "5", "4", "3" on the traditional scale. Applicants who have received grades "FX" and "F" ("2") are not included in the list of ranked applicants. The grade "FX" is assigned to applicants who have scored the minimum number of points for the current academic activity, but who have not been credited with the final control. The grade "F" is assigned to applicants who have attended all classes in the discipline, but have not gained an average score (3.00) for current academic activities and are not allowed to take the final control.

Applicants studying in the same course (one speciality), based on the number of points gained in the discipline, are ranked on the ECTS scale as follows:

Conversion of traditional mark for discipline and the amount of points according to ECTS scale

Assessment on the ECTS scale	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 next 10% of students

10. Methodological support:

- Work programme of the discipline
- Silabus
- Methodical indications for practical classes
- Methodical recommendations for independent work of higher education students
- Multimedia presentations
- Educational videos
- Situational clinical tasks
- Electronic bank of test tasks by subdivisions in the discipline
- Koshelnyk E.L. Basics of clinical anatomy and operative surgery: study guide for students / E.L.Koshelnyk, A.G.Popov. – Odessa: Odessa State Medical University, 2019. – 103 p.

11. List of questions for the differentiated test

1. Clinical anatomy of the frontal-parieto-occipital region: layers, cellular spaces, their role in the spread of inflammation. The meninges of the brain. Intermeningeal spaces. Dura mater sinuses, their connection with extracranial veins.

2. Clinical anatomy of the temporal region. Layers, cellular spaces and their relationship with other cellular spaces of the head. Clinical anatomy of the mastoid process, its structure. Triangle of Chipault. Antropomy, possible complications.

3. Debride of the short craniocerebral wounds. Stages of the operative intervention. Methods of stop bleeding from soft tissue vessels, diploethic veins, dura mater sinuses. Decompressive and bone-plastic cranial trepanation and their differences.
4. Parotideomasseteric area. Parotid salivary gland, its location, "weak places" of the capsule, projection of the excretory duct to the skin. Facial nerve, exit from the skull, branches. Justification of rational incisions on the face.
5. Deep area of the face. Fatty cellular spaces, their connection with the other spaces of the head and neck. Maxillary artery and its divisions, branches of them. Trigeminal nerve. Nuclei, formation of branches, places of exit from the skull and on the face.
6. Clinical anatomy of the nose. Paranasal sinuses, their connection with the nasal cavity.
7. Tongue: muscles, blood supply and innervation of the mucous membrane and muscles of the tongue. Ligation of the lingual artery.
8. Opening the frontal sinus. Operative access and stages of surgery. Opening the maxillary sinus. Operative access, stages of surgery.
9. Clinical anatomy of the neck: interfaces, triangles, fasciae, fatty cellular spaces.
10.Carotid triangle of the neck: borders, layered structure, neurovascular bundle. Ligation of the common and external carotid arteries.
11. Clinical anatomy of the neck organs: thyroid and parathyroid glands, larynx, pharynx.
12.Tracheotomy: types, surgical technique, possible complications, special instruments. Conicotomy, cricotomy. Subtotal subfascial resection of the thyroid gland: surgical access, stages of surgery, possible complications.
13. Clinical anatomy of intercostal spaces, their contents, topography of the neurovascular bundle. Diaphragm. Weak places of the diaphragm.
14. Clinical anatomy of the mammary gland. Lymphatic drainage in norma and in case of malignant tumours of the breast. Purulent mastitis, their varieties. Incisions for surgical treatment of mastitis. Tumours of the mammary gland. Radical mastectomy, surgical access, stages of surgery.
15. Pleura. Parts, cavity, pleural sinuses. Pneumothorax. Varieties. First medical aid. Puncture of the pleural cavity.
16. Clinical anatomy of the lungs. Division of the lungs into lobes, segments, features of blood supply. Surgical accesses to the lungs. Removal of lung, lobe and segment.
17. Clinical anatomy of the mediastinum. Borders, division into parts. Organs of the anterior and posterior mediastinum.
18. Clinical anatomy of the heart. Borders, surfaces, sulcuses, chambers. Valves of the heart. Arteries of the heart. Venous drainage. Surgical accesses to the heart. Stages of surgery for suturing a heart wound. Congenital heart and large vessel defects and their surgical treatment. Coronary artery bypass. Operative access and stages of surgery.
19. Clinical anatomy of the pericardium. Sinuses. Puncture of the pericardial cavity.
20. Thoracotomy with resection of the rib. Operative access. Stages of the operation.
21.Anterolateral abdominal wall. Division into regions and their boundaries. Weak places. Projection of abdominal organs on the anterolateral abdominal wall. Clinical anatomy of the umbilical region. Linea alba abdominis.
22. Inner surface of the anterior abdominal wall. Peritoneal folds, their contents, fossae.
23. The inguinal canal, its walls, superficial and deep rings, contents in men and women. Femoral canal, walls, openings.
24. Classification of abdominal herniae. General stages of herniotomy. Surgical repare of inguinal, femoral, umbilical and linea alba herniae.
25. The upper storey of the abdominal cavity. Lower storey of the abdominal cavity. Boundaries. Lesser sac, greater sac, recesses, paracolic gutters, mesentery sinuses.Ways of spreading purulent processes in the abdominal cavity. Connection with the pelvic cavity.

26. Laparotomy. Types of laparotomy, characteristics. Laparoscopy, characteristics of access. Intestinal sutures. structure of the intestinal wall. Anatomical and functional justification of the suture. Technique of intestinal sutures.
27. Stomach. Skeletotopy, compartments, blood supply. Surgical accesses to the stomach. Gastrostomy. Gastroenterostomy. Resection of the stomach. Types of vagotomy.
28. Clinical anatomy of the liver. Ligaments, sulcuses, liver gates, features of blood supply. Intra- and extrahepatic bile ducts. Formation and outflow of bile. Cholecystectomy. Types. Operative accesses. Stages of the operation.
29. Clinical anatomy of the pancreas. Principles of surgical interventions.
30. Clinical anatomy of the small intestine. Parts, relationship to the peritoneum, blood supply, venous drainage. Resection of the small intestine. Types of intestinal anastomoses.
31. Clinical anatomy of the colon. Parts, relationship to the peritoneum. Appendectomy. Surgical access. Stages of operations. Fecal fistula and artificial anus, their functional differences, surgical access, stages of surgical intervention.
32. Clinical anatomy of the lumbar region. Borders, parts, layered structure. Weak places. Clinical anatomy of the retroperitoneal space. Fasciae, cellular spaces and ways of spreading of purulent infection. Organs, vessels, nerve plexuses of the retroperitoneal space.
33. Clinical anatomy of the kidneys. Fixing apparatus of the kidney. Nephrotomy. Nephrectomy. Surgical accesses. Stages of the operation.
34. Clinical anatomy of the pelvis. Bones, muscles, fasciae and fatty cellular spaces of the pelvis. Ways of spreading inflammatory processes from the pelvic cavity. Storeys.
35. Clinical anatomy of the female and male perineum.
36. Clinical anatomy of the rectum. Parts, features of the structure of the intestinal wall, sphincters, arterial blood supply, venous outflow.
37. Clinical anatomy of the urinary bladder. Puncture and high dissection of urinary bladder. Operative access, stages of surgery.
38. Clinical anatomy of the testicles and their tunics. Hydrocele. Operations by Winkelman and Bergman. Stages of the operation.
39. Clinical anatomy of the uterus. Parts, structure of the wall. Supporting apparatus of the uterus. Blood supply. Venous drainage. Types of ectopic pregnancy. Surgery for ectopic pregnancy. Operative access, stages of operation.
40. Clinical anatomy of the spine. Parts, bendings, vertebral connections. Spinal cord, its membranes. Formation of spinal nerves. Lumbar puncture.
41. Clinical anatomy of the subclavian region. Triangles, vessels, nerves. Clinical anatomy of the axillary region. Axillary fossa, its walls, contents.
42. Clinical anatomy of the forearm. Surfaces, layered structure, sulcuses. Neuro-vascular bundles.
43. Clinical anatomy of the palmar surface of the hand.
44. Clinical anatomy of the gluteal region. Borders, layers, fissure, their contents.
45. Clinical anatomy of the anterior surface of the thigh. Femoral triangle. Adductor canal.
46. The popliteal fossa. Boundaries. Contents (vessels and nerves).
47. Clinical anatomy of the anterior and posterior surface of the shin. Canals. Neuro-vascular bundles.
48. Clinical anatomy of the foot: neurovascular bundles, sulcuses, contents.
49. Opening of phlegmon on the hand and forearm. Panaritium. Types, incisions.
50. Operations on the vessels. Technique of vascular sutures. Carrel's suture.
51. Ligation of the vessels of the upper and lower extremities. Projectional lines. General stages of opening and ligation of axillary, brachial, radial, ulnar, femoral, popliteal arteries.
52. Surgery for varicose desiase of veins of the lower extremities. Madelung and Babcock ways of surgical intervention..
53. Amputations. Classification. Treatmen of skin, muscles, blood vessels, nerves during amputations.
54.Three-moment cone-circular amputation according to M.I. Pirogov. Osteoplastic amputation of the hip according to Gritti-Shimanovsky. Osteoplastic amputation of the shin according to Pirogov.
55. Osteosynthesis. Osteotomy.

List of practical skills and abilities to be mastered.

1. Use of general surgical instruments:
   - for dissection of tissue;
   - for temporary stop bleeding;
   - for holding and fixing tissues;
   - for connection of tissues.

2. Temporary bleeding control (pressing large vessels to bone formations, applying a tourniquet on the limb, applying a tight bandage).
3. Mastery of tying surgical knots (double surgical, simple (female), sea);
4. Mastery of surgical suturing (interrupted, continuous) on the simulator;
5. Be able to demonstrate performing of emergency conicotomy.
6. Prepare a set of instruments for primary surgical treatment of soft tissue wounds.
7.Demonstrate sets of special surgical instruments for cranial trephination, tracheostomy, rib resection and limb amputation.

12. Recommended literature

Basic:

1. Koshelnyk E.L. Basics of clinical anatomy and operative surgery: study guide for students / E.L.Koshelnyk, A.G.Popov. – Odessa: Odessa State Medical University, 2019. – 103 p.
2. Clinical anatomy and operative surgery: text book/Slobodyan A., Kostyuk G., Yershov V., Psvtorak V.; edited by Yershov V.- Kyiv: AUS Medicine Publishing.2018.-514 p.
3. Tsyhykalo O. V. Topographical anatomy and operative surgery [Text]: textbook for english-speaking foreign students of higher educational institutions of III-IV levels of accreditation /O.V. Tsyhykalo, 3rd edition, 2018. - 524 c.

Additional:

1. Snell Richard S. Clinical Anatomy by Regions / R. S. Snell, 10th edition, 2018. - 816 p.
2. John T. Hansen. Netter's Clinical Anatomy / John T. Hansen, 3 rdedition, 2014. - 546 p.: ill.
3. Farquharson's Textbook of Operative General Surgery:bttext book/Farguharson M., Hollingshead J., Moran B., 3rd edition , 2014. -560 p.
4. Gvalani AK. Manual of Instruments and Operative Surgery. - Paperback – 2016. – 995 p.
5. E.C. Ellison. Zollinger's Atlas of Surgical Operations / R.M. Zollinger, E.C. Ellison. - 10th ed. - McGraw-Hill, 2016. - 514 p.
6. Mulholland Michael W.Operative Techniques in Surgery/ Mulholland Michael W., Albo Daniel, 2014. – 1433 p.

13. Information resources

1. **https://info.odmu.edu.ua/chair/anatomy/files/109/en** - materials from the course "Clinical Anatomy and Operative Surgery"
2. **https://webop.com –** online reference book and e-book on surgical operations.
3. **https://www.primalpictures.com.** – 3D anatomy resource for teachers, students, practitioners and professionals
4. **https://www.visiblebody.com -** resource of the international educational community "Visible Body"
5. **https://3d4medical.com** - the world's most advanced 3D anatomy platform