

# INTERNATIONAL HIGHER SCHOOL OF MEDICINE

## Department of Surgical diseases

### SYLLABUS

#### Operative surgery

2025-2026 academic year

for students of medical faculty

4 course 7 semester, groups 1-48

2 credits 60 h, including auditorial 36 h, independent work – 24 h)

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114

The Syllabus is considered  
at the meeting of the department of surgical diseases

Protocol №3 dated 06.09.2025

Head of the department Ermekov T.A.

**Course Objective:** The purpose of studying the disciplines of operative surgery - to gain scientific knowledge about the layer-by-layer structure of the human body, taking into account their applied significance for surgery, as well as mastery of surgical skills, the use of general surgical and special instruments, and the study of basic surgical interventions.

**Knowledge:**

- Goals and objectives, principles and methods of asepsis and antisepsis in professional activities;
- projection of neurovascular formations;
- projection of internal organs, their skeletopy, holotopy and syntopy;
- surgical anatomy of bones, joints, cellular spaces and fascia;
- determine and accurately know the boundaries of individual areas of the human body;
- list of surgical instruments (general surgical and special).

**Skill:**

- Select and apply various methods of asepsis and antisepsis in accordance with the goals and objectives of professional activity;
- identify the main symptoms using physical examination methods and group them into syndromes based on knowledge of the anatomical and physiological characteristics and patterns of functioning of organs and systems;
- apply knowledge of topographic anatomy to substantiate the diagnosis and select rational approaches for surgical interventions,
- to prevent intraoperative errors and complications;
- own general and special surgical instruments.

**Attitude:**

- Skills in demonstrating the selection and application of various methods of asepsis and antisepsis in accordance with the goals and objectives of professional activity;
- skills in physical examination of patients aimed at identifying the main pathological symptoms and syndromes for the purpose of reliable diagnosis of diseases;
- technique of layer-by-layer topographic-anatomical preparation of areas: upper and lower extremities, head, neck, chest, abdomen, pelvis;
- local infiltration technique according to A.V. Vipshevsky;
- knot formation techniques (simple, marine, surgical);
- technique of applying skin and intestinal sutures;
- technique for removing skin sutures;
- technique of exposure and isolation of neurovascular bundles of the upper and lower extremities from the fascial sheath;
- technique of stitching and ligating a blood vessel in a wound;
- puncture technique: pleural cavity, pericardial cavity, abdominal cavity, bladder;
- technique of suturing wounds of the stomach, small and large intestines;
- surgical technique: inguinal canal plastic surgery, appendectomy, tracheotomy, gastrostomy;
- amputation and disarticulation techniques;
- technique of incisions for opening felons, phlegmons of the hand.

**Pre-requisites.**

- Macro- and microanatomy
- Normal physiology
- Topographic anatomy
- Pathology

**Post-requisites.**

- Surgical diseases
- Anesthesiology, intensive care, emergency conditions

**THEMATIC PLAN OF LECTURES**

№	Theme of lecture	Hours	Date
<b>6 semester</b>			
1	Surgical instruments. Surgical sutures.	2	28.09.25 09.09.25
2	Operative approaches to the upper and lower extremities.	2	11.09.25 23.09.25
3	Operative approaches to the head and neck.	2	25.09.25 07.10.25
<b>7 semester</b>			

1	The operative approach to the chest wall and organs of a chest cavity.	2	09.10.25 21.10.25
2	Operative approaches to the organs of the abdominal cavity and retroperitoneal space.	2	23.10.25 04.11.25
<b>Total:</b>		<b>10</b>	

#### THEMATIC PLAN OF PRACTICAL CLASSES

№	Theme of practical class	Hours	Date
<b>6 semester</b>			
1	Types of the surgical instruments. Surgical sutures.	2	28.08.25 02.09.25
2	Operative approaches to the upper limb.	2	04.09.25 09.09.25
3	Operative approaches to the lower limb.	2	11.09.25 16.09.25
4	Operative approaches to the head.	2	18.09.25 23.09.25
5	Operative approaches to the neck.	2	25.09.25. 30.09.25
6	Unit	2	02.10.25 07.10.25
<b>Total</b>		<b>12</b>	
<b>7 semester</b>			
1	Operative approaches to the thorax.	2	16.10.25 21.10.25
2	Operative approaches to the hernias of the abdominal region.	2	23.10.25 28.10.25
3	Operative approaches to the abdomen.	2	30.10.25 04.11.25
4	Operative approaches to the retroperitoneal organs.	2	30.10.25 04.11.25
5	Operative approaches to the organs of the true pelvis.	2	06.11.25 11.11.25
6	Operative approaches to the organs of the perineum.	2	13.11.25 18.11.25
7	Unit	2	20.11.25 28.11.25
<b>Total</b>		<b>14</b>	

#### THEMATIC PLAN OF INDEPENDENT WORK OF STUDENTS

Unit №	Theme of independent work	Hours	Date
<b>6 semester Surgical instruments, sutures, approaches to the extremities, head and neck (10 hrs)</b>			
	Show and explain the blood supply of the extremities (vessels, collaterals, projections of vessels onto the skin).	5	28.08-04.09 04.09-09.09
	Make a presentation. Facial injuries. Features of primary surgical treatment. Damage to the peripheral part of the facial nerve.	5	11.09-16.09 18.09-23.09
<b>7 semester Surgical approaches to internal organs (10 hrs)</b>			
	Make a presentation and show it on a model. Chest injuries. Types of pneumothorax. First aid	5	09.10-14.10 16.10-21.11
	Show, explain. Peritoneal floor of the pelvis. Topographic-anatomical rationale for gynecological examination for pelvioperitonitis. Topographic-anatomical rationale for puncture of the posterior vaginal vault in gynecology. Execution technique. Topographic-anatomical rationale for digital examination of the rectum in surgery.	5	21.09-26.09 23.10-28.11
<b>Total</b>		<b>20</b>	

**Recommended reading for the discipline:****Basic:**

№	Authors	Title	Year of publication	Publisher	Publisher availability in the library of the ISM (quantity)
1.	Anatoly V.Nikolaev.	Topographical Anatomy and Operative surgery	3 <sup>rd</sup> edition 2022 P 736	GEOTAR-Media	15
2.	Sh. M. Chyngyshbaev, S.M.Akhunbaev, T.A.K azakbaev	Atlas of surgical operations	2020	WHDS	70
3	Bailey & Loves	Shot practice of surgery	2023 28 <sup>th</sup> edition	CRC Press	50

**Additional readings:**

№	Author	Title	Year of publication	Publisher	Publisher availability in the library of the ISM (quantity)
1.	Frank Netter 2015.P. 178- 232.	Atlas of HUMAN anatomy	2019	GEOTAR	20
2.	Harold Ellis, Sir Roy Calne, Christopher Watson. 2002/ p. 266.319.	General Surgery	2020	HL	5
3	Anil Agarwal, Neil Borley, and Greg McLatchie.	Oxford handbook of Operative surgery	2nd edition 2020	Elsevier	5
4					

Other textbooks, monographs (release date – 10 – 5 years), link.

a) Edited by Anil Agarwal, Neil Borley, and Greg McLatchie. Oxford handbook of Operative surgery. 3<sup>rd</sup> edition. 2022.

b) Articles from special journals (publication date), link. No. used.

1. Operative techniques in thoracic and cardiovascular surgery. Volume 26, Issue 1, Spring 2021, Pages 147-169. <https://www.sciencedirect.com/science/article/pii/S1522294220300763>

2. The American journal of surgery . Positive margins after mastectomy in patients with invasive lobular carcinoma of the breast: Incidence and management strategies. Volume 223, Issue 4, April 2022, Pages 699-704.

<https://www.sciencedirect.com/journal/the-american-journal-of-surgery>

c) Link to the Internet resource

<https://geekymedics.com/horizontal-mattress-suture/>

<https://geekymedics.com/vertical-mattress-suture-osce-guide/>

**Grading policy and procedures for all types of work**

For the period of studying the discipline, the student gains points for the relevant parameters (per unit):

current score - 40 points

independent work - 20 points

control score (final assessment of knowledge per unit) - 40 points

Maximum score - 100 (40+20+40)

### Grading system for student's achievements

<b>Grating criteria for the discipline</b>				
Maximum score	Intervals			
	«unsatisfactory»	«satisfactory»	«good»	«exellend»
Current control – 40	0-23	24-30	31-35	36-40
Criteria by intervals (total number of tests 10)	Number of incorrect answers during testing up to 5	5-6 correct answers	7-8 correct answers	9-10 correct answers
Independent work-20	0-11	12-15	16-17	18-20
Criteria for intervals (correct technique for performing surgical sutures)	complete lack of tightness; inappropriate ligature; time spent on completing a task more than 40 minutes.	the seal is broken, a stream of water comes out during testing. open area of the mucous layer; time spent on task 35 minutes.	slight leakage of tightness, droplets of water appear during testing; making a seam through the muscle layer; time spent on completing the task 30 minutes.	complete tightness; correct execution of the seam in layers; the time spent on completing the task is less than 30 minutes.
Control work – 40	0-23	24-30	31-35	36-40
Criteria for intervals (completeness and correctness of the answer; degree of awareness, understanding)	does not know most of the relevant issue, makes mistakes in the formulation of definitions and rules that distort their meaning, and presents the material in a disorderly and uncertain manner.	knows and understands the main provisions of this topic, but presents the material incompletely and admits inaccuracies in the definition of concepts or the formulation of rules, does not know how to substantiate his judgments and give his examples in a sufficiently deep and conclusive way; presents the material inconsistently and makes mistakes in the language of the presentation.	gives an answer that meets the same requirements as for an “excellent” grade, but makes 1-2 errors, which he himself corrects, and 1-2 shortcomings in the sequence and linguistic design of what is presented.	understands the material, can justify his judgments, apply knowledge in practice, give the necessary examples not only from the textbook, but also compiled independently; presents the material consistently and correctly from the point of view of the norms of literary language.

**Conduct Policy: (lateness, absence, behavior in the auditorium, late submission of work).**

- Punctuality and completion of tasks.
  - Mandatory attendance of classes.
  - Attending class in a clean medical uniform.
  - Eliminating conversations on a cell phone in the classroom.
  - Active participation in the learning process.
  - Doing homework on time.
  - Academic detention at the time specified by the teacher.
- For violations of the Conduct Policy, the total points for discipline might be reduced to 1-10 points.

**Academic Ethics Policy.**

- Be tolerant, respect the opinions of others.
- Formulate objections in the correct form.
- Constructively support feedback in all classes.

- Plagiarism and other forms of dishonest work are unacceptable. Plagiarism includes the following: the absence of references when using printed and electronic materials, quotes, thoughts and works of other authors or students.
  - Prompting and cheating during tests, exams, classes is unacceptable as well as passing an exam for another student, unauthorized copying of materials.
- For violations of the Academic Ethics Policy, the total points for the discipline may be reduced to 1-10 points.

### **Guidelines for the lessons of the discipline**

**6 semesters** « Surgical instruments, suture, accesses to the limbs, head and neck».

#### **Content of Unit.**

##### **Class 1**

**Key questions covered in Lecture №1: Types of the surgical instruments. Surgical sutures. (2 hrs)**

1. Groups of surgical instruments.
2. Surgical sutures.

##### **Class 2**

**Key questions covered in Practice class №1: Types of the surgical instruments. Surgical sutures. (2hrs)**

1. Practical use of tools for tissue separation
2. Instruments for arrest bleeding.
3. Using assessor tools in practice
4. Using special surgical instruments.
5. Suturing kit.
6. Type of needles.
7. Thread materials absorbability & sizes.
8. Techniques of sutures.
9. Knot tying.
10. Purse string sutures.
11. Vertical mattress technique.
12. Horizontal mattress technique.
13. Removal of sutures.

Recommended reading for the class:

[1] pp. 2-9

[2] pp. 858–873

[1] pp. 85-90

[2] pp. 788–795

<https://geekymedics.com/general-surgical-instruments/>

<https://geekymedics.com/horizontal-mattress-suture/>

<https://geekymedics.com/vertical-mattress-suture-osce-guide/>

<https://geekymedics.com/simple-interrupted-suture-osce-guide/>

<https://geekymedics.com/simple-interrupted-suture-osce-guide/>

<https://geekymedics.com/suture-material/>

##### **Class 3**

**Key questions covered in Lecture №2: Operative approaches to the upper and lower extremities. (2 hrs)**

1. Topographic anatomy of the upper and lower limbs
2. Layer-by-layer incision and restoration of limb tissue.
3. Amputation and Exarticulation

##### **Class 4**

**Key questions covered in Practice class №2: Operative approaches to the upper limb. (2hrs).**

1. Surgical anatomy of the upper limb.
2. Performing layer-by-layer tissue resection for various surgical procedures on the upper limbs.
3. Performing amputation of the upper and limb.
4. Practical disarticulation of upper limb at various levels.

Recommended reading for the class:

[1] pp. 10-93

[2] pp. 94-101

<https://geekymedics.com/total-hip-replacement-thr/>

<https://geekymedics.com/shoulder-dislocation/>

#### **Class 5**

**Key questions covered in Practice class №4: Operative approaches to the lower limb. (2hrs).**

1. Surgical anatomy of the lower limb.
2. Performing layer-by-layer tissue resection for various surgical procedures on the lower limb.
3. Performing amputation of the lower and limb.
4. Practical disarticulation of lower limb at various levels.

Recommended reading for the class:

[1] pp. 116-193

[2] pp. 196-202

<https://geekymedics.com/total-hip-replacement-thr/>

<https://geekymedics.com/intracapsular-vs-extracapsular-hip-fractures/>

<https://geekymedics.com/total-knee-replacement-tnr/>

#### **Class 6**

**Key questions covered in Lecture №2: Operative approaches to the head and neck. (2hrs).**

1. Surgical anatomy of the neck and scalp.
2. Types of neck and neurosurgery.
3. Safe areas for accessing the organs of the neck and skull.

#### **Class 7**

**Key questions covered in Practice class №5: Operative accesses to the neck (2hrs).**

1. Tracheostomy.
2. Thyroidectomy.
3. Opening the submandibular phlegmon.
4. The vagosympathetic block.
5. The cricothyrotomy or conicotomy.

Recommended reading for the class:

[1] pp. 298-342

[2] pp. 243-349

<https://geekymedics.com/anterior-posterior-triangles-of-the-neck/>

#### **Class 8**

**Key questions covered in Practice class №6: Operative approaches to the head (2hrs).**

1. Primary surgical processing of cranial wounds.
2. Operative surgery of a skull.
3. Cranio-cerebral topography on Krenlein-Brysev of cranium.
4. Primary surgical processing of cranial wounds.
5. Osteoplastic and decompressive (resection) cranial trepanation.
6. Features of primary surgical processing of wounds of face.
7. Cuts at phlegmons of the face.
8. Decompressive (resection) cranial trepanation

Recommended reading for the class:

[1] pp. 205-279

[2] pp. 280-284

<https://geekymedics.com/traumatic-head-injury-acute-management-abcde/>

<https://geekymedics.com/venous-drainage-of-the-brain/>

<https://geekymedics.com/lumbar-puncture-osce-guide/>

#### **Class 9**

**Key questions covered in Practice class №7: Module (2hrs).**

1. The list of surgical instruments (general and special).
2. Suture and suture technique. Continuous sutures, Mattress sutures. Purse string sutures. Interrupted sutures. Knot tying. The instrument tie, one handed knot, two handed knot.
3. Primary surgical processing of cranial wounds. Operative surgery of a skull. Cranio-cerebral topography on Krenlein- Brysev of cranium. Primary surgical processing of cranial wounds. Osteoplastic and decompressive (resection) cranial trepanation.
4. Features of primary surgical processing of wounds of face. Cuts at phlegmons of the face. Decompressive (resection) cranial trepanation.
5. Operative surgery of a neck and organs of the neck. Tracheostomy. Topography thyroid and parathyroid glands, larynx, trachea, pharinx and gullet. Operative surgery of a neck and organs of the neck. Intubation trachea.
6. The shoulder joint, the elbow joint, the wrist joint, the hip joint, the knee joint and the ankle joint are puncture. The technic of the vessels and nerves exposure. The phlegmon sections. Cuts at purulent inflammations of the foot. The vessels and nerves exposure.

7. The general principles of the amputation and exarticulation. Processing of vessels of nerves and bones. Tendon suture, nerven suture, neurolysis. Vascular suture. The principles of the amputation and exarticulation of an extremity.

### **Unit 7 semester « Operative approaches to internal organs ».**

#### **Content of unit**

##### **Class 1.**

#### **Key questions covered in Lecture №1: Operative approaches to the thorax. (2hrs).**

1. Topographical anatomy.
2. Areas for safe access to the chest organs.
3. Various types of access to the thoracic cavity organs.

##### **Class 2.**

#### **Key questions covered in Practice class №1: Operative approaches to the thorax. (2hrs).**

1. The mastitis and breast abscess.
2. The radical mastectomy.
3. The subclavian vein puncturing.
4. The pneumothorax and pleurocentesis.
5. The pericardiocentesis.
6. The thoracotomies: costectomy, sternotomia

Recommended reading for the class:

[1] pp. 360–415

[2] pp. 316–423

<https://geekymedics.com/mastitis-and-breast-abscess/>

<https://geekymedics.com/breast-cancer/>

<https://geekymedics.com/cardi thoracic-incisions/>

##### **Class 3.**

#### **Key questions covered in Lecture №2: Operative approaches to the hernias, organs of the abdominal cavity and retroperitoneal space. (2hrs).**

1. Topographical anatomy of the anterior abdominal wall.
2. Topographical anatomy of the abdominal cavity and retroperitoneal space.
3. Weak points of the antero-lateral abdominal wall.
4. Types of the hernias.
5. Resection and anastomoses of the intestines.
6. Operative treatment of the penetrating and blunt injuries of the abdomen.

##### **Class 4.**

#### **Key questions covered in Practice classes №2. Operative approaches to the hernias of the abdominal region. (2hrs).**

1. Indirect inguinal hernia.
2. Direct inguinal hernia.
3. Surgical repair of femoral hernia.
4. Surgical repair strangulated groin hernia.
5. Slighding hernia.
6. Umbilical hernia.
7. Femoral hernia.

Recommended reading for the class:

[1] pp. 438–462

[2] pp. 516–523

<https://geekymedics.com/abdominal-surgical-incisions/>

<https://geekymedics.com/direct-vs-indirect-inguinal-hernias/>

<https://geekymedics.com/hernias/>

##### **Class 5**

#### **Key questions covered in Practice class №3: Operative approaches to the abdomen and retroperitoneal organs. (2hrs).**

1. Penetrating injuries of the abdomen.
2. Blunt injuries of the abdomen.
3. Ruptured spleen.
4. Laceration of the liver.
5. The intestinal suture.
6. Intestinal anastomoses.
7. Accesses to kidneys and ureters.
8. Kidney injuries.
9. Stages of kidney resection at deep injuries.
10. The nephrectomy.

Recommended reading for the class:

[1] pp. 526–544

[2] pp. 463-515;

<https://geekymedics.com/appendicitis/>

<https://geekymedics.com/stomas-explained/>

<https://geekymedics.com/general-surgical-instruments/>

#### **Class 6**

**Key questions covered in Lecture №3: Operative approaches to the true pelvis and perineum. (2hrs).**

1. Topographic landmarks of the operation on the perineum.
2. Topographic landmarks of the operation on the true pelvis.
3. Types of operative approaches to the true pelvis.
4. Types of operative approaches to the perineum.

#### **Class 7**

**Key questions covered in Practice class №5: Operative approaches to the true pelvis. (2hrs).**

1. Approaches to the lesser pelvic organs through the anterior abdominal wall.
2. Urinary bladder injuries.
3. A capillary puncture of the urinary bladder.
4. The suprapubic cystostomy.
5. The high section of the urinary bladder (cystotomy).
6. Caesarean section

Recommended reading for the class:

[1] pp. 607-660

[1] pp. 665–668

<https://geekymedics.com/caesarean-section/>

#### **Class 8**

**Key questions covered in Practice class №6: Operative approaches to the perineum.**

1. Perineal ruptures.
2. The pudendal nerve anesthesia.
3. Peritoneal cavity puncture through the posterior vaginal fornix.
4. Surgery for prostate.
5. Hemorrhoids ligation.

Recommended reading for the class:

[1] pp. 639–657

[2] pp. 659-668;

<https://geekymedics.com/anal-fistula/>

<https://geekymedics.com/haemorrhoids/>

<https://geekymedics.com/anal-fissure-fissure-in-ano/>

#### **Class 9**

**Key questions covered in Practice class №7: Module №2 (2hrs).**

1. Clinical anatomy of chest wall and organs of chest cavity.
2. Operative interventions on organs of thoracic cavity: lung and pleura.
3. Operations on breast.
4. Operation on organs of mediastinum.
5. Operation on anterior abdominal wall: operations at umbilical hernias, at inguinal and femoral hernias.
6. Operation on a stomach, a duodenum, a small and large intestine, a liver, a biliary duct, a pancreas, a spleen.
7. The operation on organs of the true pelvis and of the perineum.
8. The operation on a kidneys and a ureter. Operations of the vertebral column.

#### **Methodological instructions for the implementation of independent work on the discipline:**

Independent work of students is carried out on the assignment and with the instructional guidance of the teacher, but without his direct involvement. Independent work is divided into independent work on classroom sessions and on extracurricular independent work. Independent work of students includes both fully independent development of individual topics (sections) of discipline, and development of topics (sections) mastered during classroom work. During independent work, students read and take notes of educational, scientific and reference literature, perform tasks aimed at consolidation knowledge and skills development, prepared for ongoing and intermediate control of discipline.

# E-Signature Certificate

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