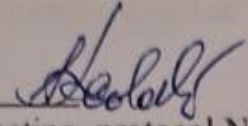




OSH STATE UNIVERSITY  
INTERNATIONAL FACULTY OF MEDICINE

Department of Anatomy, Histology and Normal Physiology

«Approved»   
at the department meeting, protocol No 1  
from " 29 " 08 2023  
Head of Department, Assoc. Dzhholdubaev S. J.

"Agreed"   
Chairman of the faculty  
from " 29 " 09 2023



**STUDENT TRAINING PROGRAM  
( SYLLABUS )  
in the discipline " Normal anatomy "**

for students studying in the specialty :  
**560001 – General Medicine ( GM )**

Form of study: full-time

Total credits: 10, course – 1 , semester – 1 .

Total labor intensity: 150 hours, including: classrooms – 75 h (l lectures – 30 hours, practical – 45 h.); SRS – 75 hours.

Number of milestone controls (RC): module – 4 , eczema – 1 semester.

Information about the teacher: Asanbek K

Department , room number : 106 Morphological building.

Contact Information: opening hours - 8.00.-17.00,

mobile phone: +996550903790

email: kasanbekkyzy @ oshsu . kg

Date of: 2022-2023 academic year

**Osh – 2023**

## 1. GOALS OF DISCIPLINE

The purpose of studying normal anatomy is for the student to acquire knowledge on the structure of the human body, the structure of organs and organ systems, their topography and development based on modern achievements of macro- and microscopic anatomy, as well as the formation of general professional medical competence in matters of the structural organization of the basic processes of the body's vital activity.

## 2. DISCIPLINE LEARNING RESULTS

Based on the results of studying normal anatomy in combination with other disciplines, the student should develop the following competencies ( **expected results** ):

### **Expected learning outcomes (ROD-1):**

**PO1** – Able to use basic knowledge of the humanities, natural sciences, and economics in professional work ( **OK-1** );

### **Expected learning outcomes (ROD-6):**

**PO2** – Able to use modern communication technologies, including in a foreign language, for academic and professional interaction

### **Expected learning outcomes (ROD-7):**

**PO7** – Able to apply basic knowledge in the field of diagnostic activities to solve professional problems ( **PC-15** );

### **Expected learning outcomes (ROD-11):**

**PO11** - Able to apply basic knowledge in the field of research activities to solve professional problems ( **IK-1** );

*Upon completion of the normal anatomy course, students should*

### **A) know and understand:**

- the main directions and stages of development of anatomical science, its significance for medicine and biology, methods of anatomical research;
- basic patterns of development and vital activity of the human body based on the structural organization of organs and systems;
- structure, functions, topography and development of all organs and systems of the body, taking into account age, gender and individual characteristics;
- possible structural options, main anomalies and malformations of organs and their systems;
- anatomical and topographical relationship of individual organs and parts in the human body;
- blood supply, lymphatic flow paths and innervation of organs;
- anatomical terms in accordance with the International Anatomical Nomenclature.

**B) be able to**( *on anatomical preparations, dummies, images obtained by various visualization methods, in a sitter* ):

- accurately and accurately identify parts and areas of the human body; determine the main bone formations, joint spaces, muscle contours and their projection onto the surface of the body;
- accurately and accurately determine the location and projection of organs on the surface of the body and in relation to the skeleton;
- accurately and accurately determine the location of the main blood vessels and nerves, the places of pulsations of the arteries.

### **B) own:**

- medical-anatomical conceptual apparatus and the skill of using it;
- skills in working with biological material and using simple medical instruments - a scalpel and tweezers;
- basic technologies for converting information: independent work with educational literature on paper and electronic media, Internet resources on human anatomy;

### 3. Technological map of the discipline (based on the example of one semester)

Total	Audi. watch	SRS	1-module (75 hours, 30 points)			1-line control (RK1)	2-module (75 hours, 30 points)			2-line control (RK2)	Bottom line. control (40 points)				Final score
			Audi. watch		SRS		Audi. watch		SRS		Lecture	Practitioner.	SRS	Final control (IC)	
			Lecture	Practitioner.			Lecture	Practitioner.							
150	75	75	14	21	35	30 b.	16	24	40	30 b.	40	40	40	40 b	100b
Points			thirty	thirty	thirty		thirty	thirty	thirty		thirty	40	40	40	
Types of control			TK = (TK N +...+TKN) M1 = (Lek+Prak+CPC)/3,			TK = (TKN+...+TKN) M2 = (Lek+Prak+CPC)/3,			Spec=M1+M2+IR				100b		

Note: Audi. - classroom, TC - current control, RK - midterm control, M - module, SRS - independent work of students, IC - final control, N - number.

### 4. Card for accumulating points in the subject normal anatomy on a section of 1 module

No.	Group names	Average daily TC score	SRS	RK	Total
	Full names of students	30 points	30 points	30 points	30 points
1.					
2.					

Module = Average score pr.z.+SRS+RK/3

Technological map for accumulating points for a student group \_\_\_\_\_  
(discipline: " Human anatomy ", specialty: 560001-medicine

( GM ), I , II semester, 2022-20 23 academic year) (using the example of one lesson)

LESSON No. 1		Topic No. 1							
No	I-week	Class attendance	Copybook	dictionary	Album	Activity	C/W	total	Date of rework

	<b>FULL NAME. students</b>	5	3	3	4	10	5	thirty	
<b>1.</b>									

## 5. SUMMARY OF THE DISCIPLINE

- **Introduction to Anatomy :**
  - subject, objectives, research methods;
  - anatomical terminology, nomenclature;
- **Somatology :**
  - osteology;
  - arthrosyndesmology;
  - myology;
- **Splanchnology :**
  - digestive system;
  - respiratory system;
  - urinary and reproductive systems;
- **Cardiovascular and lymphoid systems :**
  - arterial system;
  - venous system;
  - lymphatic system;
  - organs of the immune and lymphatic systems, endocrine glands;
- **Nervous system and sensory organs:**
  - central nervous system;
  - peripheral nervous system;
  - autonomic nervous system;
  - sense organs and skin;

## 6. THEMATIC PLAN FOR DISTRIBUTION OF HOURS BY TYPE OF CLASSES

Calendar-thematic plan of lecture classes  
for students in specialty 560001 - general medicine  
(1st semester, 2022-2023 academic year)

No. weeks	No. classes	Name of sections, modules, topics	Number of hours	
According to the curriculum	1.	Introduction to the subject. General anatomy and development of the skeletal system.	2 hours	14 hours
	2.	General anatomy of skeletal joints. Development.	2 hours	
	3.	General anatomy and development of the bones of the skull.	2 hours	
	4.	Introduction to myology. Functional anatomy of the muscles of the head and neck.	2 hours	
	5.	Functional anatomy of the trunk muscles.	2 hours	
	6.	Functional anatomy of the muscles of the limbs.	4 hours	
		<i>Module: "Musculoskeletal system"</i>	<b>2 hours</b>	

According to the curriculum	1.	General anatomy and development of the digestive system.	2 hours	16 hours
	2.	Peritoneum and its derivatives. Glands of the digestive system.	2 hours	
	3.	General anatomy and development of the respiratory system.	2 hours	
	4.	General anatomy and development of the urinary system.	4 hours	
	5.	General anatomy and development of the organs of the reproductive system.	4 hours	
	6.	General anatomy and development of the endocrine system and immune organs	2 hours	
	<b>Module: "Splanchnology"</b>		<b>2 hours</b>	
	<b>Total</b>		<b>30 hours</b>	

**Calendar-thematic plan of practical classes  
for students in specialty 560001 - general medicine  
(1st semester, 2022-2023 academic year)**

No. weeks	Lesson number	Name of sections, modules, topics	Number of hours
1 Week	1.	Introduction to Anatomy. Axis and plane. The Skeleton. Bones. The bones of the vertebral column and thorax.	2 hours
2 week	2.	Introduction to syndesmology. Joints of the vertebral column and thorax.	2 hours
3 week	3.	Bones of pectoral girdle and upper limb and their connections.	2 hours
4 week	4.	Bones of pelvic girdle and lower limbs and their connections	2 hours
5 week	5.	Bones of cerebral and fascial skull.	2 hours
week 6	6.	Skull as a bone: Cranial fossa and its foramina. Joints of the skull.	2 hours
week 7	7.	Muscles and fascia of head and neck. Triangles of neck.	2 hours
8 week	8	Muscles and fascia of back, thorax and abdomen. Weak places of abdomen.	2 hours
Week 9	9	Muscles and fascia of the upper limb and its topography. Muscles and fascia of lower limbs and its topography..	2 hours
		<b>1ST MODULE: MUSCULOCAL SYSTEM</b>	<b>2 hours</b>
8 week	1.	General anatomy of the digestive system. The structure of the mouth, palate and salivary glands. Teeth and its types .	2 hours
Week 9	2.	The structure of the pharynx, esophagus and stomach.	2 hours
10 week	3.	The structure of the small and large intestine.	2 hours
11 week	4.	The structure of the liver, gallbladder and pancreas. Spleen.	2 hours
12 week	5.	Peritoneum and its derivatives. The topography of the organs of the digestive system in the abdominal cavity.	2 hours

13week	6.	The structure of the nasal cavity, paranasal sinuses and larynx. Anatomy and topography of the trachea, main bronchi.	2 hours
Week 14	7.	The structure and topography of the lungs, pleura and mediastinal organs.	2 hours
Week 15	8.	The structure of the kidneys, Formation of urine.	2 hours
Week 16	9.	The structure ureters, bladder, urethra.	2 hours
Week 17	10.	Anatomy and topography of the female genital organs. Mammary gland	2 hours
Week 18	eleven.	Anatomy and topography of the male genital organs. Perineum	2 hours
Week 19	12.	General anatomy of the endocrine system. Thyroid and perithyroid glands;- Adrenal gland;- Pituitary gland, pineal body	2 hours
Week 20	13.	General anatomy of the immune organs. Glands of mixed secretion; - Primary and secondary organs of the immune system;	2 hours
		<b>MODULE 2: "SPLANCHNOLOGY"</b>	<b>2 hours</b>
<b>Total hours</b>	Lecture classes		30 hours
	Practical lessons		45 hours
	Modules		4 hours

**Calendar-thematic plan of lecture classes  
for students in specialty 560001 - general medicine  
(2nd semester, 2022-2023 academic year)**

<b>No. weeks</b>	<b>No. classes</b>	<b>Name of sections, modules, topics</b>	<b>Number of hours</b>	
According to the curriculum	1.	Introduction to Neuroscience. Functional anatomy of the spinal cord.	2 h	16 hours
	2.	Functional anatomy of the brainstem.	2 h	
	3.	Functional anatomy of the subcortical nuclei. Diencephalon.	2 hours	
	4.	Functional anatomy of the telencephalon. Localization of functions (centers) in the cerebral cortex. olfactory brain, limbic system.	4 h	
	5.	Conducting pathways of the brain and spinal cord.	2h.	
	6.	Functional anatomy of the sense organs. The structure of the eyes and ears. Leather and its derivatives.	2h	
		<b>Module: "Central nervous system"</b>	<b>2 h</b>	
According to the curriculum	1.	General anatomy and development of the arterial system. Heart.	2 h	14 hours
	2.	General anatomy and development of the venous system. Fetal circulation.	2 h	
	3.	General anatomy and development of the lymphatic system	2 h	
	4.	General anatomy and development of cranial nerves	4 h	
	5.	General anatomy and development of the spinal nerves	2 h	
	6.	Autonomic nervous system. Patterns of autonomic innervation of internal organs.	2 h	
		<b>Module: "Vascular and peripheral nervous system"</b>	<b>2 h</b>	

		<b>Total</b>	<b>30 hours</b>

**Calendar-thematic plan of practical classes  
for students in specialty 560001 - general medicine  
(2nd semester, 2022-2023 academic year)**

No. weeks	Less on number	Name of sections, modules, topics	Number of hours
1 Week	1.	General overview of the nervous system. Spinal cord: macrostructure, topography of gray and white matter, membranes.	2 hours
2 week	2.	The furrows and convolutions of the cerebral hemispheres. Exit sites for cranial nerves. Medulla oblongata: external and internal structure.	2 hours
3 week	3.	The pons and cerebellum: macrostructure, topography of gray and white matter.	2 hours
4 week	4.	Midbrain: macrostructure, topography of gray and white matter. Diamond-shaped fossa. IV ventricle.	2 hours
5 week	5.	Diencephalon: macrostructure, topography of gray and white matter. III ventricle.	2 hours
week 6	6.	Telencephalon: The grooves and convolutions of the cerebral hemispheres. macrostructure, topography of gray and white matter. Lateral ventricles. Functional centers of the brain.	4 hours
week 7	7.	Meninges of the brain. Pathways for the outflow of cerebrospinal fluid. Pathways of the brain and spinal cord	2 hours
8 week	8.	Functional anatomy of the sense organs. The structure of the eyes and ears. Leather and its derivatives	4 hours
		<b>1ST MODULE: "CENTRAL NERVOUS SYSTEM"</b>	2 hours
Week 9	1.	Aortic arch. Carotid arteries. Arterial circle of the cerebrum. Subclavian artery. Arteries of the upper limb.	2 hours
10 week	2.	Thoracic aorta. Abdominal aorta. Iliac arteries. Arteries of the lower limb.	4h.
11 week	3.	General overview of veins. Superior and inferior vena cava. Portal vein. Venous anastomoses. Fetal circulation.	4 hours
12 week	4.	Lymphatic system: trunks and tributaries. Regional lymph nodes.	2 hours
Week 13	5.	Cranial nerves: formation, exit points, branches, areas of innervation (sensory and motor, mixed nerves)	6h.
Week 14	6.	Spinal nerves: formation, exit points, branches, areas of innervation.	4 hours
Week 15	7.	Autonomic nervous system, patterns of innervation of internal organs.	3 hours
		<b>MODULE 2: "VASCULAR AND PERIPHERAL NERVOUS SYSTEM"</b>	2 hours
<b>Total hours</b>	Lecture classes		30 hours
	Practical lessons		45 hours
	Modules		4 hours

No.	Name of topics for SRS I semester	Wate h
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<b>Module No. 1</b>		
1	History of anatomy. Ontogenesis. Scoliosis. Anatomy of bone and joint development.	5
2	Anomalies in the development of bones of the upper extremities.	5
3	Developmental anomalies of the lower limb bones.	5
4	Craniometry. Age and gender characteristics of the skull and developmental anomalies.	5
5	Amyotrophy. Torticollis. Clinical significance of triangles of the neck.	5
6	Hernias. Projection lines. Intercostal spaces and their contents.	5
7	Anomalies in the development of muscles of the upper and lower extremities.	5
<b>2 Module</b>		<b>35 h</b>
1	Age-related features of the development of oral organs. Anomalies in the development of oral organs. Atresia of the pharynx, esophagus	5
2	Gastric atresia. Meckel's diverticulum. Hirschsprung's disease.	5
3	Anomalies in the development of the liver, spleen, gall bladder. Diseases of the peritoneum and retroperitoneum	5
4	Age-related features of the respiratory system. Anomalies in the development of the paranasal sinuses.	5
5	Developmental anomalies of the bronchi, lungs and mediastinum.	5
6	Anomalies of heart development.	
7	Age-related features of the genitourinary system.	5
8	Anomalies in the development of male and female genital organs.	5
		<b>40 h</b>
<b>Total</b>		<b>75 h</b>

<b>No.</b>	<b>Name of topics for SRS II semester</b>	<b>Watc h</b>
<b>Module No. 1</b>		
1	Stages of phylogenesis of the nervous system and the main phenomena that appear: centralization, cephalization, corticolization, subordination.	5
2	General overview of the brain, where the cranial nerves exit. Brain stem. The structure of the medulla oblongata, pons and midbrain.	5
3	Topography of the isthmus of the rhombencephalon. Cerebellum. External structure of the cerebellum, representatives of its old, ancient and new parts, localization of nuclei	5
4	Diencephalon. Divisions of the diencephalon (thalamus, epithalamus, metathalamus, subthalamus and hypothalamus with its three regions), their components, position and role.	5
5	Criteria for identifying the main components of the telencephalon: limbic lobe (olfactory brain), basal ganglia, mantle. Basal ganglia as components of the strio-pallidal and extrapyramidal systems.	5
6	The cerebrospinal fluid circulation system in ontogenesis. Clinical aspects of neuroanatomy.	5
7	Pyramid system: components and role. Methods of studying and general classification of pathways. The nature of commissural and associative connections. Principles of organization of ascending and descending projection pathways.	5
8	Visual pathway. Organ of hearing and balance. and vestibular pathways.	5
		<b>40 h</b>
<b>Module No. 2</b>		
1	Variants of arterial blood supply to the heart. Blood supply to the spinal cord, possibilities of	5



	collateral blood flow.	
2	Sources and features of arterial blood supply to the walls of the pelvis, rectum and anal canal, uterus, tubes, vagina, perineum, prostate, bladder, external genitalia.	5
3	Collateral circulation and its role in normal and pathological conditions, merits of N.P. Pirogov in the development of ideas about him	5
4	Organization of blood circulation in the fetus and its postnatal restructuring.	5
5	Maskani and its clinical expression (metastasis). The role of domestic scientists (D.A. Zhdanov and others) in the study of the lymphatic system.	5
6	Features of the posterior branches of C1 and C2. Dynamics of the anterior branches of the spinal nerves	5
7	Ontogenesis, vegetative nervous system, parasympathetic nervous system, sympathetic nervous system, ganglion, reflex arc	5
		<b>35h</b>

## **7. Educational, methodological and information materials**

### **Main literature:**

1. *Chaurasia' s BD HUMAN ANATOMY: Regional and Applied / Dissection and Clinical) . Vol. 1-4. – all Edition ;*
2. *Chaurasia' s BD HANDBOOK OF GENERAL ANATOMY . – all Edition ;*

### **Additional literature:**

1. ATLAS OF HUMAN ANATOMY, Professional Edition, 7th Edition.
2. CLINICAL ANATOMY: Applied Anatomy for Students and Junior Doctors, 14th Edition.
3. GRAY'S ANATOMY for Students, 4th Edition.
4. HUMAN ANATOMY & PHYSIOLOGY, 11th Edition.
5. THE ANATOMY COLORING BOOK.
6. *Sobotta*. ATLAS OF HUMAN ANATOMY, 15th Edition.
7. *Kolesnikov LL, Nikitiuk DB, Klochkova SV, Stelnikova IG* TEXTBOOK OF HUMAN ANATOMY. Vol.1-3. – M.: GEOTAR-MEDIA, 2018. – 320 p.
8. *Clinical neuroanatomy; Vishram sing*
9. *Clinical neuroanatomy; Richard, Snell.*
10. *Dr Rachel Koshi "Cunningams manual of practical anatomy"*

### **Cathedral literature:**

1. OSTEOLOGY (workbook) . O.V.Kalmin., K.Sh.Sakibaev, K.Asanbek kyzy et all. – Osh: 2019. – 112 p.
2. ARTHROLOGY (workbook). O.V.Kalmin., K.Sh.Sakibaev, A.M. Ergeshova et all. – Osh, Penza: 2019. – 104 p.
3. MYOLOGY (workbook). O.V.Kalmin., K.Sh.Sakibaev, U.A. Ashimov et all. – Osh, Penza: 2019. – 118 p.
4. SPLANCHNOLOGY (workbook). O.V.Kalmin., K.Sh.Sakibaev, K.Asanbek kyzy et all. – Osh, Penza: 2019. – 142 p.

5. CRANIOLOGY (workbook) OVKalmin., K.Sh.Sakibaev, AMergeshova et all.. – Osh, Penza: 2019. – 108 p.
6. C ENTRAL NERVOUS SYSTEM AND SENSE ORGANS (workbook). O.V.Kalmin., K.Sh.Sakibaev., IV Bochkareva et all. – Osh, Penza: 2019. – 142 p.
7. ANGION EUROLOGY OF THE HEAD AND NECK (workbook). O.V.Kalmin., K.Sh.Sakibaev., K.Asanbek kyzy et all. – Osh, Penza: 2019. – 102 p.
8. ANGIONEUROLOGY OF INTERNA L ORGANS AND WALLS OF CAVITIES (workbook) OVKalmin., K.Sh.Sakibaev, U.A. Ashimov. – Osh, Penza: 2019. – 112 p.
9. ANGIONEUROLOGY OF LIMBS (workbook). O.V.Kalmin., K.Sh.Sakibaev, A.M. Ergeshova et all. – Osh, Penza: 2019. – 102 p.
10. TOPOGRAPHIC ANATOMY (workbook). O.V.Kalmin., K.Sh.Sakibaev, Dzh. Dzhholdubaev et all. – Osh, Penza: 2019. – 112 p.

#### Software, electronic sources

- <http://anatomy-portal.info>
- <http://www.ksma.edu.kg/>
- <http://www.library.ru/>
- <http://www.medicalstudent.com>
- <http://www.medicinform.net>
- <http://www.mma.ru/>
- <http://www.rmj.ru>
- <http://www.rsmu.ru/>

#### 10. SCORING INFORMATION (SCORE TABLE)

100 point system	30 point system	Letter grade	Digital equivalent of assessment	Traditional assessment
87 – 100	<b>26 – 30</b>	A	4.0	Great
80 – 86	<b>24 – 25</b>	IN	3.33	Fine
74 – 79	<b>22 – 23</b>	WITH	3.0	
68 -73	<b>20 – 21</b>	D	2.33	Satisfactorily
61 – 67	<b>18 – 19</b>	E	2.0	
31-60	<b>9 – 17</b>	FX	0	Unsatisfactory
0-30	<b>0 – 8</b>	X	0	

In accordance with current regulations and recommendations, the Ministries of Education and Science of the Kyrgyz Republic establish the following criteria for grading exams in the humanities, natural sciences and other disciplines:

- **points “26-30” “excellent”** are given to a student who has demonstrated in all lessons a comprehensive, systematic and deep knowledge of the educational program material, the ability to freely perform tasks provided by the program, who has mastered the basic literature and familiarized himself with additional literature recommended by the program.

-exhibited to students who have mastered the relationship between the basic concepts of the discipline and their meanings for the acquired profession, and who have demonstrated creative abilities in understanding, presenting and using educational material.

-**points “24-25 ” “good”** are given to a student who has discovered the significance of the educational material during the module, successfully completed the tasks provided for in the program, and mastered the basic literature recommended in the program.

-exposed to students who have demonstrated the systematic nature of their knowledge in the discipline and are capable of independently completing and updating it in the course of further educational work and professional activities.

-**points “22-23 ” “satisfactory”** are given to a student who has demonstrated knowledge of the basic educational material to the extent necessary for further study and future work in the profession, who can cope with the tasks provided for by the program, who has familiarized himself with the basic literature.

- awarded to students who made errors in their answers during the module and when performing independent assignments, but who have the necessary knowledge to correct them under the guidance of a teacher.

- **points “15 or less” “unsatisfactory”** are assigned to a student who has discovered gaps in knowledge of the main educational program material, has made fundamental errors in the implementation of the program provided for, and has not mastered the basic knowledge provided for in this discipline and defined by the corresponding course program (list of basic knowledge and skills that students must master is a mandatory element of the work program).

## **11. SCORING POLICY**

In accordance with the points accumulation card, a student can receive points for all types of classes. In lectures, in practical classes and for performing SRS. At the same time, for current and milestone controls - a maximum of 30 points for 1 module; final control – maximum 40.

## **12. COURSE POLICY**

The organization of the educational process is carried out using a modular rating system for assessing student performance using the AVN information system.

**A)** Students are presented with the following systems of requirements and rules of behavior in the classroom:

- *Compulsory attendance at classes;*
- *Activity during classes;*
- *Preparation for classes, homework and SRS.*
- *Appearing for self-training.*

Unacceptable:

- *Being late and leaving classes;*
- *Using cell phones during classes;*
- *Cheating and plagiarism;*
- *Late delivery of assignments.*

**B)** The organization of the educational process is based on the systematic work of students during the entire academic year. The types of training sessions on human anatomy in accordance with the curriculum are:

- *Lectures;*
- *Practical lessons;*
- *Independent (extracurricular) work of students;*
- *Individual work of your choice.*

✓ **Themes** *The lecture course* reveals problematic issues from the relevant sections of human anatomy.

✓ **Practical classes** include mastering:

- knowledge of Latin (Greek) terminology;
- knowledge of the sources and patterns of embryonic development, the structure of human organs and organ systems, clinical methods for their study (x-ray anatomical method, computed tomography, magnetic resonance imaging (MPT), ultrasound ( US ), endoscopy, etc.);
- dissection skills, demonstration of anatomical formations on natural preparations, models, dummies;
- assessment of age, gender and individual characteristics of the structure of human organs;
- solving situational problems that have a clinical and anatomical basis.

✓ **Independent (extracurricular) work** involves mastering the following skills:

- anthropometric (macroscopic) description of organs;
- demonstrate organs, their parts and other formations on preparations ;
- draw diagrams and drawings based on the topic material;
- interpret visualized results of clinical research methods (read x-rays, tomograms, etc.)

✓ **Individual educational and research (UIRS)** or scientific research (NIRS) work of students (optional) involves :

- preparation of a review of scientific literature (abstract);
- preparation of illustrative material on the topics under consideration (multimedia presentation, set of tables, diagrams, drawings, etc.);
- production of educational and museum natural preparations, models;
- conducting scientific research within the framework of the student scientific circle of the department;
- participation in scientific state budget topics of the department;
- participation in Olympiads, etc.

**C)** Mastery of the topic is monitored during practical classes in accordance with specific goals. It is recommended to use the following forms of current monitoring of the level of students' training:

- written (or computer) testing in the scope of tests;
- answering tickets and solving situational problems;
- control of practical skills in dissection and demonstration of anatomical preparations, with subsequent analysis and assessment of the structural features of human organs;
- analysis of topographic-anatomical relationships of human organs and systems (knowledge of the basics of clinical anatomy);
- analysis of the sources and patterns of prenatal and early postnatal development of human organs, variations of organ variability, and developmental defects.

Final monitoring of module mastery is carried out upon completion and includes:

- oral interview on natural anatomical preparations (control of practical skills).
- computer or written test control based on the scope of tests and situational tasks of control work (semantic modules);

### **13. Self-study program**

**(2022-2023 academic year)**

#### **"MUSCULETORAL SYSTEM"**

*(topics for literature reviews and abstract messages)*

##### **Osteology**

1. Stages of skeletal development in phylogeny and ontogenesis.
2. Ossification centers: types, timing of appearance. The concept of bone age.
3. The concept of constitution and physique. Body types. Body type criteria.
4. Systemic anomalies in the development of the skeletal system (achondrogenesis, achondroplasia, fibrous dysplasia, osteogenesis imperfecta).
5. Anomalies in the development of vertebral bodies, arches and processes.
6. Anomalies in the development of the limbs due to aplasia or hypoplasia of the structures.
7. Anomalies in the development of the limbs due to the development of additional structures.
8. Anomalies of limb development due to non-separation or fusion of structures.
9. Anomalies in the development of the limbs due to excessive development of structures.

##### **Arthrology**

1. Types of bone joints. Age-related changes.
2. Types of movement in joints. Factors that determine the range of motion in joints.
3. The spinal column as a whole. Curvatures of the spinal column. Age characteristics. Formation of posture. Anomalies of the development of the spinal column in general.
4. The chest as a whole. Age and individual characteristics. Abnormal chest shapes.
5. The pelvis as a whole: sections, gender differences. Dimensions of the female pelvis. Abnormal pelvic shapes.
6. Solid base of the foot. The foot as a whole. Arches of the foot. Types of foot deformities (flat feet, varus and valgus deformities, cauda equina).

##### **Skull as a whole**

1. Craniology. Sections of the skull and their constituent bones. Abnormal skull shapes.
2. Stages of skull evolution. Changes in the skull during anthropogenesis.
3. Embryonic development of the skull, its stages.

4. Features of the newborn's skull. Fontana bones.
5. Development and growth of the skull after birth. Anomalies of the skull associated with premature fusion of sutures. Age and sex differences in the skull.
6. Anomalies of the facial and cerebral part of the skull (agnathia, aprosopia, hypertelorism, hypotelorism, acrania, hemicrania, craniostenosis, platybasia, etc.).
7. Frontal and parietal bones: developmental anomalies (intraparietal suture, metopic suture, enlarged parietal foramen).
8. Occipital bone: developmental anomalies (nuchal carina, manifestation of the proatlas, third condyle, transverse and sagittal occipital sutures), age-related features.
9. Sphenoid bone: developmental anomalies (craniopharyngeal canal, foramen venosum of Vesalius, spine sellae, tuberosity of the dorsum sellae, interoblique foramen, meningeal-orbital foramen, intrapterygoid suture).
10. Bones of the facial skull: nasal, zygomatic and lacrimal bones, developmental anomalies (bifid zygomatic bone, prefrontal bone).
11. Upper jaw: developmental anomalies (agnathia, polygnathia, micrognathia, prognathia, retrognathia, accessory infraorbital foramen, cleft maxilla, incisive suture).
12. Lower jaw: developmental anomalies (progeny, microgeny, laterognathia, agnathia, accessory canal of the mandible, incisive canal of the mandible, mental ossicles, Robinson's canal).
13. Airborne paranasal sinuses: variants and developmental anomalies.
14. Nasal cavity: bone base, communications, developmental anomalies.
15. Oral cavity: bone base, communications, developmental anomalies.
16. Orbit: walls, communications, developmental anomalies (orbital latticework).
17. Bone palate: structure, developmental anomalies (palatine ridge, cleft, incisal suture).

### **Myology**

1. The muscular system, its role in the body. The structure of skeletal muscle.
2. Classification of muscles by shape, location of muscle bundles, function.
3. Development of skeletal muscles. Accessory apparatus of muscles.
4. Fascia and cellular spaces of the lateral surface of the face.
5. Deep cellular spaces of the face.
6. Cellular spaces of the cranial vault.
7. Topography of the neck (regions, triangles).
8. Fascia of the neck (according to V.N. Shevkunenko, according to PNA).
9. Cellular spaces of the neck.
10. Diaphragm: parts, holes and their contents, weak points.
11. Muscles that produce respiratory movements.
12. Axillary fossa and axillary cavity: borders, walls.
13. Topography of the hand. Features of the structure of synovial vaginas.
14. Muscles that produce movements in the wrist joint.
15. Muscles that produce movements of the fingers.
16. Topography of the shoulder and forearm (grooves, canals, pits).
17. Sheath of the rectus abdominis muscle.
18. Inguinal canal: walls, openings, contents.
19. Fascia and topography of the thigh (grooves, canals, triangles).
20. Fascia and topography of the lower leg (canals, grooves).
21. Muscles that produce movements in the ankle and subtalar joints.
22. Foot muscles: structure, function.

### **"SPLANCHNOLOGY"**

#### **Digestive \_ systems a**

1. General principles of the structure of internal organs.
2. Topography and variability of internal organs.
3. Embryogenesis of the digestive tract organs.
4. Developmental anomalies, their classification
5. Development of teeth. Anomalies of dental development.
6. Dentofacial system. Articulation. Occlusion. Bites. Physiological and abnormal types of occlusions.
7. Pirogov-Waldeyer lymphoepithelial ring. Age characteristics.

8. The act of swallowing and sucking. Anomalies in the development of the pharynx.
9. Large intestine: topography, differences from the small intestine, relation to the peritoneum, developmental anomalies.
10. Abdominal cavity and peritoneum. Derivatives of the peritoneum.
11. Peritoneum. Functional anatomy. Transuding and resorbing areas.
12. Peritoneal cavity: floors, differences in men and women. Upper floor formations.
13. Omental bursa: boundaries and messages.
14. Greater omentum: formation, developmental anomalies.
15. Formations of the lower floor of the peritoneal cavity.

#### **Respiratory system**

1. Paranasal sinuses: structure, age-related features, developmental anomalies.
2. Lung development. Anomalies of the respiratory system.
3. Structural and functional unit of the lung. The concept of the bronchial and alveolar tree.
4. Topography of the lungs.
5. Pleura. Pleural cavity. Sinuses of the pleura. Boundaries of the pleural cavity.
6. Mediastinum: boundaries and sections.

#### **Heart**

1. Heart development. Abnormalities in the shape, size and structure of the heart. Age-related anatomy and variability of the heart.
2. Classification of cardiac anomalies. Combined heart defects. Anomalies in the origin of the main vessels from the heart.
3. Vessels of the pulmonary circulation. Arterial duct. Developmental anomalies.

## LIST OF QUESTIONS AND TASKS ON TOPICS AND FORMS OF CONTROL

### *Final control questions*

#### **I. About general theoretical questions. And the history of anatomy**

1. Anatomy subject. Research methods . Axes and planes. Conditional lines.
2. Individual variability. The concept of variants of the norm. Body types.
3. Human anatomy and age. Age periodization.
4. Anatomy in primitive society, in the ancient world, in the Middle Ages.
5. Anatomy of the Renaissance, in the 17th and 18th centuries.
6. Anatomy in the 19th century.
7. Anatomy in the 20th century.
8. Educational museum in human anatomy. History, meaning.
9. Study guides on human anatomy: atlases and textbooks. Creation stories.

#### **II. Anatomy of the musculoskeletal system (blood supply, innervation, lymphatic drainage)**

1. Bone as an organ. Classification of bones. Age characteristics.
2. Vertebrae. Connections between vertebrae. Atlanto-occipital joint.
3. The spinal column as a whole. From bending, biomechanics of movements.
4. Ribs and sternum. Connections between the ribs and the vertebrae and sternum.
5. The chest as a whole. Movement of the ribs.
6. Development of the skull in ontogenesis. Sutures and fontanelles. Variants and anomalies of the skull.
7. Bones of the brain skull. Temporal bone: its parts, holes, canals, their purpose.
8. Bones of the facial skull. The eye socket, the structure of its walls, openings , their purpose.
9. Skull as a whole. Vault (roof) of the skull; the bones that form it.
10. Temporal, infratemporal and pterygopalatine fossa: walls, openings and their purpose.
11. The nasal cavity, the structure of its walls. Paranasal sinuses, variants and anomalies.
12. The inner surface of the base of the skull (fossa). Holes and their purpose.

13. Outer surface of the base of the skull. Holes and them, on value.
14. Continuous and discontinuous connections. Classification.
15. Connections of the skull bones, types of sutures. Temporomandibular joint.
16. Bones and joints of the shoulder girdle. Biomechanics of movements.
17. Shoulder joint. Biomechanics of movements.
18. Connections of the bones of the forearm and hand. Biomechanics of movements.
19. Elbow joint, features of its structure. Biomechanics of movements.
20. Joints of the hand: structure, shape, movements.
21. Pelvic bones and their connections. Pelvis as a whole. Dimensions of the female pelvis.
22. Hip joint: structure, shape, movements.
23. Knee joint: structure, shape, movements.
24. Ankle joint: structure, shape, movements.
25. Bones of the leg and foot, their connections. Shapor and Lisfranc joints.
26. Muscle as an organ. Classification . Auxiliary apparatus of muscles.
27. Muscles and fascia of the back, their topography, structure, functions.
28. Muscles and fascia of the chest, their topography, structure, functions.
29. Anatomy of the abdominal muscles, their topography, functions. Weak spots.
30. Sheath of the rectus abdominis muscle. White line. Umbilical ring.
31. The inguinal canal, its walls and contents.
32. Diaphragm, its parts, topography, function. Weak spots.
33. Muscles and fascia of the neck, their topography, structure, functions.
34. Neck areas, their boundaries. Neck triangles, their practical significance.
35. Facial muscles, their topography, structure, functions.
36. Chewing muscles, structure and functions . Fascia of the masticatory muscles.
37. Muscles and fascia of the shoulder girdle: their structure, topography, functions.
38. Muscles and fascia of the shoulder: their anatomy, topography, functions.
39. Muscles and fascia of the forearm, their anatomy, topography, functions
40. Muscles of the hand. Osteofibrous canals and synovial sheaths of the hand .
41. The axillary fossa, its walls, openings, their purpose. Radial nerve canal .
42. Anatomy of the gluteal region: muscle topography, their functions.
43. Holes and channels in the walls of the pelvis, their purpose.
44. Anterior muscles and fascia of the thigh. Muscular and vascular lacunae.
45. Femoral canal, its walls and rings (deep and subcutaneous).
46. Medial and posterior muscles and fascia of the thigh. Adductor channel.
47. Muscles and fascia of the leg. Their topography, functions.
48. Muscles of the foot: their topography, functions.

### III. Anatomy of internal organs

#### *Digestive system* (blood supply, innervation, lymphatic drainage)

1. Digestive system. Development. Relationships between organs and the peritoneum.
2. Oral cavity: lips, vestibule of the mouth, hard and soft palate.
3. Milk and permanent teeth. Dentition , formula of milk and permanent teeth.
4. Language. Muscles of the tongue: skeletal, intrinsic. Papillae of the tongue.
5. Sublingual and submandibular salivary glands. Excretory ducts.
6. Parotid salivary gland. Excretory ducts.
7. The pharynx, its topography, structure.
8. Esophagus: topography, structure.
9. Stomach, structure, topography.
10. Duodenum: its parts, structure, topography.
11. Jejunum and ileum, structure , topography.
12. The large intestine, its sections, structure, topography, relationship to the abdomen .
13. Caecum: structure, topography of the appendix.
14. Rectum: topography, relationship to the peritoneum.
15. Liver: its development, structure, topography.
16. Gallbladder, its structure, topography. Excretory ducts .
17. Pancreas: structure, topography, water ducts.

18. Small seal. Omental, hepatic, pregastric bursae, their walls.
19. Big seal. "Pockets", lateral canals, mesenteric sinuses.

***Respiratory system***  
**(blood supply, innervation, lymphatic drainage)**

1. External nose. Nasal cavity (olfactory and respiratory areas).
2. Larynx: cartilages, their connection. Elastic cone of the larynx. Muscles of the larynx.
3. Trachea and bronchi. Their structure, topography.
4. Lungs: structure, topography. Roots and segmental structure of the lungs, acinus.
5. Pleura, its sections, boundaries; pleural cavity, pleural sinuses.
6. Mediastinum: sections, their topography; mediastinal organs.

***Genitourinary apparatus***  
**(blood supply, innervation, lymphatic drainage)**

1. Kidneys, their development, structure, topography. The structure of the nephron.
2. Anatomy of the urinary tract of the kidney: nephron, renal calyces, pelvis.
3. Ureters and bladder. Their structure, topography.
4. Male and female urethra: topography, sections, sphincters.
5. Testicle, epididymis. Testicular membranes.
6. Prostate gland, seminal vesicles. Bulbo-urethral glands.
7. The spermatic cord, its topography, components.
8. Male external genitalia, their structure.
9. Ovaries, their topography, structure, relationship to the peritoneum.
10. Ovarian appendages, their origin, topography, relationship to the peritoneum.
11. Uterus: parts, topography, ligaments, relationship to the peritoneum.
12. Fallopian tube: structure, topography, relation to the abdomen.
13. Vagina: structure, topography, relationship to the peritoneum.
14. Female external genitalia; their structure.
15. Muscles and fascia of the male and female perineum.
16. Anatomy of the peritoneum in the male and female pelvic cavity.

**IV. Anatomy of the cardiovascular system**

1. General anatomy of blood vessels. Microcirculatory bed.
2. Anastomoses of arteries and anastomoses of veins. Pathways of roundabout blood flow.
3. Features of the blood supply to the fetus.
4. Heart: structure and topography. Conduction system of the heart.
5. Chambers of the heart, structure of the myocardium of the atria and ventricles.
6. Heart valves, their structure, projection onto the chest wall.
7. Pericardium, its structure, topography; pericardial sinuses.
8. Arteries of the heart. Features and options for their branching. Veins of the heart.
9. Innervation of the heart. Extracardiac and intracardiac plexuses.
10. Aorta and its parts. Branches of the arch and thoracic part of the aorta, their topography.
11. Parietal and visceral (paired and unpaired) branches of the abdominal aorta.
12. Common, external and internal iliac arteries, their branches, areas of branching.
13. External carotid artery, its topography, branches and areas supplied by them.
14. The internal carotid artery, its topography, branches and areas supplied by them.
15. Subclavian artery: topography, branches and areas supplied with blood.
16. Arteries of the brain, Greater arterial (circle of Willis).
17. Axillary and brachial arteries: topography, branches and areas of blood supply.
18. Arteries of the forearm: topography, branches, areas of blood supply.
19. Arteries of the hand. Arterial palmar arches and their branches.
20. Femoral artery: its topography, branches and areas of blood supply.
21. Popliteal artery, its topography and branches. Blood supply to the knee joint.
22. Arteries of the leg: topography, branches and areas of blood supply.
23. Arteries of the foot: topography, branches, areas of blood supply.
24. The superior vena cava, sources of its formation and topography.



25. Azygos and semi-gypsy veins, their tributaries and anastomoses.
26. Brachiocephalic veins, roots and tributaries, their topography.
27. Sinuses of the dura mater. Emissary and diploic veins.
28. Intracranial and extracranial pathways for the outflow of venous blood from the brain.
29. The inferior vena cava, sources of its formation and topography. Roots and tributaries.
30. Portal vein. Roots and tributaries, their topography. Portal vein anastomoses.
31. Veins of the upper limb, their anatomy , topography, anastomoses.
32. Veins of the lower limb, their anatomy, topography, anastomoses.

## **V. the lymphatic and immune systems**

1. Principles of the structure of the lymphatic system.
2. The thoracic duct, its formation, structure, topography, place of confluence.
3. The right lymphatic duct, its formation, topography, place of confluence.
4. Lymph node as an organ. Classification of lymph nodes.
5. Anatomy and topography of lymphatic vessels and nodes of the head and neck.
6. Anatomy and topography of the lymphatic vessels of the nodes of the upper limb.
7. Anatomy and topography of the lymphatic vessels of the nodes of the lower limb.
8. Lymphatic bed of the lungs and topography of the lymph nodes of the chest cavity.
9. Anatomy and topography of lymphatic vessels of the nodes of the abdominal organs.
10. Anatomy and topography of the lymphatic vessels of the pelvic nodes.
11. Central organs of the immune system: bone marrow, thymus. Their topography.
12. Peripheral organs of the immune system. Their topography.
13. Spleen: development, topography, structure, blood supply and innervation.

## **VI. Anatomy of the central nervous system**

1. Nervous system. Classification. Concept of a neuron. Receptors, their types.
2. Spinal cord: its development, structure, topography. Gray and white matter.
3. Brain development - brain vesicles and their derivatives .
4. The grooves and convolutions of the superolateral surface of the cerebral hemispheres.
5. The grooves and convolutions of the medial and basal surfaces of the cerebral hemispheres.
6. The structure of the cerebral cortex and associative pathways.
7. Anatomy and topography of the basal ganglia and internal capsule.
8. Anatomy and topography of the corpus callosum, fornix and commissures .
9. Anatomy and topography of the lateral ventricles of the brain and their walls.
10. Anatomy and topography of the olfactory brain.
11. Anatomy and topography of the diencephalon. Nuclei and pathways.
12. Anatomy and topography of the midbrain. Nuclei and pathways.
13. Anatomy and topography of the bridge. Nuclei and pathways.
14. Anatomy and topography of the cerebellum. Nuclei and pathways.
15. Anatomy and topography of the medulla oblongata. Nuclei and pathways.
16. Anatomy of the rhomboid fossa; its relief. Projection of the nuclei of the cranial nerves.
17. Ventricles of the brain, walls . Pathways for the outflow of cerebrospinal fluid.
18. Reflex arc. Classification of brain pathways.
19. Conducting pathways of pain and temperature sensitivity . Topography.
20. Conducting pathways of tactile sensitivity. Topography.
21. Pathways of proprioceptive sensitivity. Topography.
22. Medial lemniscus, fiber composition, topography.
23. Motor pyramidal tracts. Topography
24. Reticular formation of the brain and its composition. Topography.
25. Limbic system, its nuclei, location in the brain.
26. The membranes of the brain and spinal cord. Intershell spaces.
27. Sinuses of the dura mater of the brain. The structure, then the geography.

## **VII. Anatomy of the peripheral nervous system**

1. Spinal nerve, its formation, branches. Rear winds
2. Cervical plexus, its topography, nerves; areas of innervation .

3. Branches of the supraclavicular part of the brachial plexus, area of innervation.
4. Branches of the infraclavicular part of the brachial plexus, area of innervation.
5. Innervation of the skin of the upper limb: the origin and geography of the nerves.
6. Innervation of the muscles and skin of the hand. Origin and topography of nerves.
7. Intercostal nerves, their branches, areas of innervation.
8. Lumbar plexus, its topography, nerves, areas of innervation.
9. Sacral plexus, its topography, nerves, areas of innervation.
10. The sciatic nerve, its branches, areas of innervation.
11. Innervation of the skin of the lower limb. Origin and geography of nerves.
12. Olfactory and optic nerves. Topography of the conductive path.
13. Oculomotor, trochlear and abducens nerves, their anatomy and topography.
14. Trigeminal nerve, its branches, their anatomy, topography, areas of innervation.
15. Facial nerve, its branches, their anatomy, topography, areas of innervation.
16. The vestibulocochlear nerve, its anatomy, topography, areas of innervation.
17. Glossopharyngeal nerve, its branches, their anatomy, topography, areas of innervation.
18. The vagus nerve, its branches, their anatomy, topography, areas of innervation.
19. Accessory and hypoglossal nerves: topography, branches, areas of innervation.
20. Parasympathetic division of the autonomic nervous system (distribution of branches).
21. Sympathetic division of the autonomic nervous system (distribution of branches).
22. Cervical sympathetic trunk, nodes, branches, areas of innervation.
23. Thoracic sympathetic trunk, nodes, branches, areas of innervation.
24. Lumbar and sacral sections of the sympathetic trunk, nodes, branches.
25. Sympathetic plexuses of the abdominal cavity and pelvis.

### **VIII. Anatomy of the sense organs (blood supply, innervation, lymphatic drainage)**

1. Organ of hearing and balance: general structural plan and functional features.
2. Outer ear and middle ear. Parts, buildings.
3. Inner ear. Conducting path of the vestibular and auditory analyzer.
4. Organ of vision: general plan of the structure. Conducting path of the visual analyzer.
5. Auxiliary apparatus of the eyeball.
6. Organs of taste and smell. Their structure, topography.
7. Anatomy of the skin and its derivatives. Mammary gland: topography, structure.

### **IX. Anatomy of the endocrine glands (blood supply, innervation, lymphatic drainage)**

1. Thyroid and parathyroid glands, their topography, structure.
2. Posterior pituitary gland, adrenal medulla and pineal gland.
3. Pituitary gland, its topography, structure.
4. Adrenal glands, their development, topography, structure.
5. The intrasecretory part of the pancreas, gonads, their topography.

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40. Anatomy and topography of the bridge. Nuclei and pathways.
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