MINISTRY OF EDUCATION AND SCIENCE OF THE RUSSIAN FEDERATION

PENZA STATE UNIVERSITY

MEDICAL INSTITUTE

AGREED:
Director of the Medical Institute
_____ A.N. Mitroshin
"_05_" _March_ 2016.

STUDY PROGRAM

C1.1.15 Human anatomy

Course – 31.05.01 General Medicine

Graduate's qualification – Medical doctor

Type of study – full-time

Penza, 2016

1. Aims and goals

The purpose of the mastering of the human anatomy is to study anatomy and physiology, age, sex and individual characteristics of the structure and development of the human organism.

The purposes of studying human anatomy are: to study structure and topography of the organs, individual, sex and age peculiarities of body structure, including prenatal development (organogenesis), anatomic and topographic relationships of organs, their X-ray image; variants of variability of individual organs, their malformations.

2. Links to other disciplines of the general curriculum

Academic discipline «Human Anatomy» refers to basic part of the cycle C1. Disciplines

Human Anatomy is one of the basic disciplines, which is interconnected with the disciplines: Latin, Biology, Histology.

The main theses of human anatomy are required to study the clinical disciplines: Physiology, Pathological Anatomy, Topographic Anatomy and Operative Surgery, Internal Medicine, Surgery, Obstetrics and Gynecology, Pediatrics, Neurology, Otorhinolaryngology, Ophthalmology, Urology, Traumatology and Orthopedics.

3. Student competences, developed during learning "Human anatomy"

According to the state curriculum for the course, learning is oriented at developing the following competences and their elements:

Competence code	Name of the competence	Structural elements of the competence (knowledge, skill, application as a final learner outcome)
GC-1	ability of abstract thinking, logical analysis and synthesis skills	knowledge: general patterns of origin and evolution of life; anthropogeny and human ontogeny, the main patterns of development and functioning of the body of an adult and a teenager on the basis of the structural organization of cells, tissues and organs; anatomical and physiological, age and sex and the individual characteristics of the structure and development of healthy and sick human functional systems of the human body.
		skill: find in preparations show and call in Latin studied anatomical structures; palpate the main man on bony landmarks, topographic contours outline organs and major vascular and nerve trunks; analyze histological assessment of a variety of cellular, tissue and organ structures in patients and analyze results X-ray examination of patients.
		application: biomedical conceptual apparatus; basics of scientific and technical information of medical subjects, reviewing the results of clinical, laboratory and instrumental methods of examination of patients.
GPC-1	willingness to solve typical problems in their professional activities using different information sources, medical terminology, computer technologies and complying with the demands of information security	knowledge: histofunctional particular tissue elements, and methods of their investigation; anatomical and physiological, age and sex and the individual characteristics of the structure and development of healthy and sick human functional systems of the human body, their regulation and self-regulation when exposed to the external environment in normal and pathological processes.
		skill: analyze the modern domestic and foreign scientific and technical information, use this knowledge to assess the functional state of the body of an adult and a teenager.
		application: biomedical conceptual apparatus; basics of scientific and technical information of medical subjects, reviewing the re-

		sults of clinical, laboratory and instrumental methods of examination of patients.
GPC-7	implementing knowledge in general science and its branches for solving professional tasks	knowledge: medical anatomical conceptual apparatus structure of the human body, the general laws of origin and evolution of life, and human ontogenesis anthropogeny, basic laws of development and functioning of the human body.
		skill: find in preparations show and call in Latin studied anatomical structures; palpate the main man on bony landmarks, topographic contours outline organs and major vascular and nerve trunks; analyze histological assessment of a variety of cellular, tissue and organ structures in patients and analyze results X-ray examination of patients.
		application: biomedical conceptual apparatus; basics of scientific and technical information of medical subjects, reviewing the results of clinical, laboratory and instrumental methods of examination of patients.
GPC-9	knowing how to use medicines, medical products and technologies in solving professional problems	knowledge: the basic methods of making anatomical preparations, especially age structure of organs, the basic principles of the analysis of radiographs.
		skill: produce anatomical and analyze anatomical variants and abnormal structure of organs, to interpret the results of X-ray and CT examinations
		application: medical anatomical conceptual apparatus; underlying technologies transform information; basics of anatomical tools, reviewing the results of X-ray examination of patients.

4. Structure and content of the discipline “Human anatomy”

4.1. Structure of the discipline

Overall workload equals 11 ECTSs, 396 hours.

№	Names of parts and topics of the discipline	Semester	Week of the semester	Types of learner activities, including students' individual work and workload (in hours)									Forms of current assessment *(divided in weeks)*							
				Class study				Individual work												
				Total	Lectures	Practical classes	Laboratory classes	Total	Preparation for class study	Abstract	Term paper (project)	Exam preparation	Discussion	Tutorial	Test assessment	Test paper grading	Research paper assessment	Workbook assessment	Term paper (project)	Assessment of practical skills
1.	**Osteology**																			
1.1.	Anatomical terminology. The axes and planes in anatomy. The structure of the bones. The structure of a typical vertebra.	1	1	4	2	2		1	1				1					1		1
1.2.	The structure of the cervical, thoracic, lumbar vertebrae.	1	2	4	2	2		1	1				2					2		2
1.3.	The structure of the sacrum, coccyx, sternum, ribs.	1	2	2		2		1	1				2					2		2
1.4.	The structure of the scapula, clavicle, humerus.	1	3	2		2		2	1		1		3					3		3
1.5.	The structure of the bones of the forearm and hand.	1	4	2		2		2	1		1		4					4		4
1.6.	The structure of the pelvic bone, the femur.	1	4	2		2		2	1		1		4					4		4
1.7.	The structure of the bones of the leg and foot.	1	5	2		2		2	1		1		5					5		5
1.8.	The control class in osteology.	1	6	2		2		1	1				6		6					6
2.	**Arthrology**																			
2.1.	Vertebral joints. Joints between cranium and spinal column. Spinal column in common.	1	6	4	2	2		2	1		1		6					6		6
2.2.	Joints of ribs and sternum. Thorax in common.	1	7	4	2	2		2	1		1		7					7		7

№	Names of parts and topics of the discipline	Semester	Week of the semester	Types of learner activities, including students' individual work and workload (in hours)									Forms of current assessment *(divided in weeks)*							
				Class study				Individual work												
				Total	Lectures	Practical classes	Laboratory classes	Total	Preparation for class study	Abstract	Term paper (project)	Exam preparation	Discussion	Tutorial	Test assessment	Test paper grading	Research paper assessment	Workbook assessment	Term paper (project)	Assessment of practical skills
2.3.	Joints of the upper limb.	1	8	4	2	2		2	1		1		8					8		8
2.4.	Joints of the lower limb.	1	8	2		2		2	1		1		8					8		8
2.5.	The control class in arthrology.	1	9	2		2		1	1				9		9					9
3.	**Craniology**																			
3.1.	General view of skull. The occipital, parietal, frontal bone.	1	10	4	2	2		2	1		1		10					10		10
3.2.	The structure of the sphenoid, ethmoid and temporal bones.	1	10	2		2		2	1		1		10					10		10
3.3.	The structure of the facial bones of the skull.	1	11	2		2		2	1		1		11					11		11
3.4.	Vault and base of the skull. Orbit, pterygopalatine, temporal and infratemporal fossa. Bone base of the nasal cavity and mouth. Skull of a newborn.	1	12	4	2	2		2	1		1		12					12		12
3.5.	The control class in craniology.	1	12	2		2		1	1				12		12					12
4.	**Myology**																			
4.1.	Muscle, fascia and the topography of the head.	1	13	5	3	2		2	1		1		13					13		13
4.2.	Muscle, fascia and the topography of the neck.	1	14	2		2		2	1		1		14					14		14
4.3.	Muscle, fascia and the topography of the chest, abdomen and back	1	14	2		2		2	1		1		14					14		14
4.4.	Muscles, fascia and the topography of the upper limb	1	15	2		2		1	1				15					15		15
4.5.	Muscles, fascia and the topography of the lower limb	1	16	2		2		1	1				16					16		16
4.6.	The control class in myology	1	16	2		2		1	1				16		16					16
4.7.	Defense of the course work	1	17	3		3		1	1										17	
5.	**Splanchnology**																			

№	Names of parts and topics of the discipline	Semester	Week of the semester	Types of learner activities, including students' individual work and workload (in hours)									Forms of current assessment *(divided in weeks)*							
				Class study				Individual work												
				Total	Lectures	Practical classes	Laboratory classes	Total	Preparation for class study	Abstract	Term paper (project)	Exam preparation	Discussion	Tutorial	Test assessment	Test paper grading	Research paper assessment	Workbook assessment	Term paper (project)	Assessment of practical skills
5.1.	The cavity of the mouth, lips and cheeks. Hard and soft palate, pharynx. Permanent and deciduous teeth	2	1	4	2	2		1	1				1					1		1
5.2.	Tongue. Salivary glands. Pharynx. Lymphoepithelial ring	2	1	2		2		1	1				1					1		1
5.3.	Esophagus. Stomach.	2	2	2		2		1	1				2					2		2
5.4.	The small intestine. Mesentery.	2	2	2		2		1	1				2					2		2
5.5.	The large intestine	2	3	2		2		2	1		1		3					3		3
5.6.	Liver. The gall bladder and bile duct. The pancreas. The spleen.	2	3	2		2		2	1		1		3					3		3
5.7.	The peritoneum and its derivatives. Peritoneal cavity.	2	4	2		2		2	1		1		4					4		4
5.8.	External nose, nasal cavity. Larynx. The thyroid and parathyroid glands.	2	4	4	2	2		2	1		1		4					4		4
5.9.	The trachea. Bronchi. The lungs.	2	5	2		2		2	1		1		5					5		5
5.10.	The pleura. The pleural cavity. Mediastinum. The thymus gland.	2	5	2		2		2	1		1		5					5		5
5.11.	Kidney. The adrenal glands. Ureters. The bladder. Female urethra	2	6	4	2	2		2	1		1		6					6		6
5.12.	Testicle. The epididymis. The vas deferens. The spermatic cord. The seminal vesicles. The prostate gland. Bulbourethral gland	2	6	4	2	2		2	1		1		6					6		6
5.13.	Penis. Male urethra.	2	7	2		2		2	1		1		7					7		7
5.14.	Ovary. Appendages of the ovary. The uterus. Fallopian tubes. Vagina.	2	7	2		2		2	1		1		7					7		7
5.15.	Female external genitalia. Perineum	2	8	2		2		2	1		1		8					8		8
5.16.	Splanchnology – testing. Independent work with aids	2	8	2		2		1	1						8					8

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				Class study				Individual work												
				Total	Lectures	Practical classes	Laboratory classes	Total	Preparation for class study	Abstract	Term paper (project)	Exam preparation	Discussion	Tutorial	Test assessment	Test paper grading	Research paper assessment	Workbook assessment	Term paper (project)	Assessment of practical skills
5.17.	The control class in splanchnology	2	9	2		2		1	1				9							9
6.	**Central nervous system and sense organs**																			
6.1.	The spinal cord and intermeningeal spaces. Blood supply of the spinal cord	2	9	4	2	2		2	1		1		9					9		9
6.2.	General view of the brain. The exit site of the cranial nerves. Medulla	2	10	4	2	2		2	1		1		10					10		10
6.3.	Hindbrain: the bridge, the cerebellum. Rhomboid fossa. The fourth ventricle.	2	10	2		2		2	1		1		10					10		10
6.4.	Midbrain. Diencephalon. Hypophysis. Epiphysis. Third ventricle.	2	11	2		2		2	1		1		11					11		11
6.5.	Telencephalon. Hemisphere of the brain, their lobes sulci and gyri. The olfactory brain.	2	11	4	2	2		2	1		1		11					11		11
6.6.	Subcortical nuclei. White matter hemisphere. The lateral ventricles.	2	12	2		2		2	1		1		12					12		12
6.7.	Brain matters and intermeningeal space. Organs of development and outflow pathways of cerebrospinal fluid. Sinuses of the dura mater. Blood supply of the brain.	2	12	2		2		2	1		1		12					12		12
6.8.	CNS pathways. Afferent pathways of CNS	2	13	2		2		2	1		1		13					13		13
6.9.	Efferent pathways of CNS	2	13	2		2		2	1		1		13					13		13
6.10.	Sense organs. The organ of sight. Eyeball.	2	14	5	3	2		2	1		1		14					14		14
6.11.	Subsidiary organs of the eye. The visual pathway.	2	14	2		2		2	1		1		14					14		14
6.12.	Vestibulocochlear organ External, middle ear.	2	15	2		2		2	1		1		15					15		15
6.13.	Internal ear. Auditory and vestibular pathways.	2	15	2		2		2	1		1		15					15		15

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6.14.	Organ of taste. Olfactory organ. The skin and its derivatives. Mammary gland.	2	16	2		2		2	1		1		16					16		16
6.15.	CNS and sense organs – testing. Independent work with aids	2	16	2		2		1	1						16					16
6.16.	The control class in CNS and sense organs.	2	17	2		2		1	1				17							17
6.17.	Defense of the course work	2	17	3		3		1	1										17	
7.	**Angioneurology of the Head and Neck**																			
7.1.	Heart - external and internal structure, topography, blood vessels and nerves. The pericardium and its cavity	3	1	4	2	2		1	1				1					1		1
7.2.	The arteries of the head and neck. Common and external carotid arteries	3	2	2		2		1	1				2					2		2
7.3.	The internal carotid artery, subclavian artery. The blood supply of the brain and spinal cord.	3	2	2		2		1	1				2					2		2
7.4.	The veins of the head and neck. Anastomoses of intra-and extracranial veins, superficial and deep veins of the face.	3	3	4	2	2		1	1				3					3		3
7.5.	I-IV, VI cranial nerves	3	4	2		2		1	1				4					4		4
7.6.	V cranial nerve	3	4	2		2		1	1				4					4		4
7.7.	VII-X cranial nerves	3	5	4	2	2		1	1				5					5		5
7.8.	XI-XII cranial nerves. Cervical plexus.	3	6	2		2		1	1				6					6		6
7.9.	Overview of the innervation and blood supply of the head and neck.	3	6	2		2		1	1				6					6		6
7.10.	The control class in angioneurology of the head and neck	3	7	4	2	2		2	2				7		7					7
8.	**Angioneurology of limbs**																			
8.1.	Arteries and veins of the upper limbs	3	8	2		2		1	1				8					8		8

№	Names of parts and topics of the discipline	Semester	Week of the semester	Types of learner activities, including students' individual work and workload (in hours)									Forms of current assessment *(divided in weeks)*							
				Class study				Individual work												
				Total	Lectures	Practical classes	Laboratory classes	Total	Preparation for class study	Abstract	Term paper (project)	Exam preparation	Discussion	Tutorial	Test assessment	Test paper grading	Research paper assessment	Workbook assessment	Term paper (project)	Assessment of practical skills
8.2.	The brachial plexus and its branches.	3	8	2		2		1	1				8					8		8
8.3.	Arteries and veins of the lower limbs.	3	9	4	2	2		1	1				9					9		9
8.4.	The lumbar plexus and its branches.	3	10	2		2		1	1				10					10		10
8.5.	The sacral plexus and its branches.	3	10	2		2		1	1				10					10		10
8.6.	Overview of the innervation and blood supply of the limbs.	3	11	4	2	2		1	1				11					11		11
8.7.	The control class in angioneurology of limbs.	3	12	2		2		2	2				12		12					12
9.	**Angioneurology of internal organs and the walls of the cavities**																			
9.1.	Aorta and its parts. The branches of arch, thoracic and abdominal aorta. The blood supply of the abdominal cavity.	3	12	2		2		1	1				12					12		12
9.2.	Common, external and internal iliac arteries and their branches. Blood supply of the pelvic organs	3	13	4	2	2		1	1				13					13		13
9.3.	The upper and lower vena cava, their roots and ducts. Cava-caval anastomoses	3	14	2		2		1	1				14					14		14
9.4.	Portal vein, its roots, inflows. Porto-caval anastomoses. The fetal circulation. Features of the restructuring of the vascular bed after birth.	3	14	2		2		1	1				14					14		14
9.5.	Lymphatic drainage from the head, neck and limbs.	3	15	4	2	2		1	1				15					15		15
9.6.	The outflow of lymph from the walls of the cavities and organs of the chest and abdominal cavities.	3	16	2		2		1	1				16					16		16

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				Class study				Individual work												
				Total	Lectures	Practical classes	Laboratory classes	Total	Preparation for class study	Abstract	Term paper (project)	Exam preparation	Discussion	Tutorial	Test assessment	Test paper grading	Research paper assessment	Workbook assessment	Term paper (project)	Assessment of practical skills
9.7.	The autonomic nervous system: general view, difference from the somatic part of the nervous system. Parasympathetic part of the autonomic nervous system.	3	16	2		2		1	1				16					16		16
9.8.	Sympathetic department of the autonomic nervous system. Overview of the autonomic innervation of the organs.	3	17	5	3	2		1	1				17					17		17
9.9.	Overview of the innervation and blood supply of the internal organs.	3	18	2		2		1	1				18					18		18
9.10.	The control class on angioneurology of internal organs and the walls of the cavities.	3	18	2		2		2	2				18		18					18
9.11.	The repetition of the material from I and II semesters	3	19	3		3		2	2				19							19
	Term paper	*1*						*15*			*15*								*17*	
	Term paper	*2*						*25*			*25*								*17*	
	Exam preparation	*3*						*36*				*36*								
	Overall workload, in hours			229	53	176		167	91		40	36	Interim assessment							
													Type					Semester		
													pass-fail exam							
													exam					*3*		

4.2. Content of the discipline

Introduction

Human anatomy is the scientific study of form and structure, origin and development of human body. Anatomy provides a systematic description of the shape, structure, location and topographical relationships of parts and organs of the body. It widely uses data from embryology, comparative anatomy, anthropology and finds out the impact of the environment and social factors, labor and sports on the structure of the human body.

Anatomy and related disciplines, anatomy and its place in medicine

Anatomy refers to the morphological section of the biological sciences. Together with physiology, it is the basis of theoretical and practical medicine, as accurate knowledge of form and structure of man, which is required for understanding vital functions of healthy and sick human body and creating correct representations of etiology, which are indispensable for carrying out prevention and treatment of the disease.

To understand the specific features of human body structure variants and anomalies knowledge of the basic stages of human development is required. To do this, the initial stages of human embryogenesis, the doctrine of germ layers should be considered in the course of anatomy. Tissues epithelial, connective, muscular and nervous. Organs, systems and devices. The concept of the soma, insides. Variants of the structure and topography of the organs in the light of the teachings of VN Shevkunenko about forms of variability of the human body. Body types. The concept of normal variants. Axis and the planes of the human body.

Methods of studying anatomy

On the dead material: preparation, as a method of studying the basis of anatomy, injection of vessels by embalming solution, colored fillings, bleaching, corrosion, x-ray, cuts according to Pirogov, macro-and microscopy.

On a living person: anthropometry, fluoroscopy and x-ray, endoscopy. Experiments on animals, etc.

Some areas of anatomy, appropriate research methods: macroscopic, microscopic and macro- (frontier areas of research according to VP Vorobyev), microscopic anatomy, anatomy of a living being (radiological anatomy, dynamic anatomy).

Anatomical terms. Medical anatomical nomenclature in the Latin and English languages, its importance in medical education.

History of anatomy

Stages of development of anatomical knowledge. Confrontation of materialistic tendencies and principles with idealistic views on the structure of the human body. Religion is a factor that slows the development of anatomy down. The value of the works of Aristotle, Herophilus, Erasistratus, Galen, Ibn Sina (Avicenna) in the development of anatomy as a science.

Anatomy in the Renaissance. The role of Leonardo da Vinci in the development of anatomy. The value of the works of Vesalius on the progress in human anatomy. Harvey was the founder of the theory of circulation. Value of opening Malpighi for microscopic anatomy.

The history of Russian anatomy. Anatomy in ancient Russia, in the southern and western regions. The founders of scientific anatomy in Russia (A.P.Protasov, M.I.Schepin) N.M.Maksimovich-Ambodik, A.M.Shumlyansky, PA Zagorski, I.V.Buyalsky) Pirogov, his work and methods for the study of topographical anatomy. P.F.Lesgaft is the creator of the functional anatomy. Works of V.M.Bekhterev, and V.A.Bets D.N.Zernov on anatomy of the central nervous system.

Development of anatomy in the USSR. V.P.Vorobjev is the founder of the macro-and microscopic anatomy. V.N.Tonkov, B.A.Dolgo-Saburov, their role in the development of experimental morphology. G.M.Iosifov, D.A.Zhdanov, their contribution to the anatomy of the lymphatic system. M.F.Ivanitsky (dynamic anatomy).

I. Scientific study of bones - osteology

General anatomy of the skeleton. Bone development (brief information about phylogenesis, ontogenesis), their classification (in form, structure and development).

Separated parts of bone: diaphysis, epiphysis, metaphysis. The structure of bone: cortical (compact) and cancellous (trabecular) substance. The chemical composition, physical and mechanical properties of bone. Periosteum. Bone as an organ. Features of the structure of the bones in childhood, adolescence, adult, middle and old age. Bone in the X-ray image. The influence of labour, physical culture and sports in the bone structure (P.F.Lesgaft). The role of social and biological factors in the development and structure of the skeleton.

Axial skeleton

The spinal column. Brief information about the phylogenesis and ontogenesis of spine. The characteristic traits acquired during anthropogenesis. The principle of segmental structure in the axial skeleton. Features of the structure in different parts of the spine (cervical, thoracic and lumbar vertebrae). Sacrum, coccyx. Age and sex characteristics of the structure and function of the spine.

The ribs and sternum, their development (phylogenesis and ontogenesis), structure. Classification of ribs (true, false, and floating), forms of variability, anomalies of development.

Skull

The development of the skull (brief details ontogenesis and phylogenesis). Facial and cerebral parts of cranium, their changes in the process of anthropogenesis. The bones that make up the cerebral cranium: the frontal, sphenoid, occipital, parietal, ethmoid, temporal. Facial bones of the skull: mandible and maxilla, inferior nasal concha, vomer, nasal, lacrimal, zygomatic, palatine, the hyoid bone. The structure of the individual bones of the facial skull and brain caused by features of their development and function.

Topography of the skull: fornix, external and internal base of the skull. Anterior, middle and posterior cranial fossa, orbit, nasal cavity, the bones that make up the walls of the oral cavity, temporal, infratemporal and pterygopalatine fossa.

Age-related peculiarities of the skull: skull of a newborn (fontanelles and other features), relations in the development of cerebral and facial skull periods of intensive growth of the skull after birth. Senile changes in the skull bones. Sex and typical structural features of the skull, the options of norms and anomalies of development. X-ray of the skull. Criticism of racist theories in the study of the skull.

The bones of the limbs

Summary of the phylogenesis and ontogenesis of limb bones.

The bones of the upper limb: the clavicle, scapula: the skeleton of a free upper limb: humerus, forearm and wrist; sesamoid bone. X-ray data on the structure and timing of the ossification of the skeleton of the free upper extremity.

The bones of the lower extremity: Pelvic bone, parts. The skeleton of free lower limb: the femur, tibia, foot, sesamoid bones. X-ray data on the structure and timing of the ossification of the skeleton-free zone, and the lower limbs. Similarities and differences in the structure of the skeleton of the upper and lower extremities due to their functions. The specific features in the structure of the bones of the upper and lower limbs of human acquired during anthropogenesis. Malformations of the skeletal limbs.

II. Scientific study of bone compounds – arthrology

The development of compounds. Summary of the phylogenesis and ontogenesis. The classification of compounds according to their bone structure and function: the fibrous connections (syndesmosis: membranes, ligaments, joints, cartilage compounds (synchondroses) symphysis, synovial connections (joints).

The structure and component parts of the joint. Classification of joints in the structure and shape of articulated surfaces, and functions. Simple and sophisticated, complex and combined joints. Uniaxial, biaxial and multiaxial joints. Types of joint movement and elemental analysis (rotation axis plane motion).

Joints of the body and skull. The compounds of the vertebral bodies. The intervertebral disc (annulus, the nucleus pulposus) facet connection cords. Atlanto-occipital and atlanto-axial joints. Spinal column in general (bends, age and sex specifics); spinal column in x-ray image. Costovertebral and sternoclavicular joints (connections). The chest in general. Forms of the thorax. X-ray of thorax. Anomalies of the structure of the thorax. Specific features of the structure and function of the spine and thorax in human body due to bipedal locomotion, body types, the influence of environmental factors.

Joints of the skull: the seams and synchondroses; temporomandibular joint.

Joints of the upper limbs. Acromioclavicular and sternoclavicular joints.

Joints of free upper limb. Shoulder. The elbow joint. Joints of the forearm. Wrist, intercarpal and mediacarpal joints. Joints of the hand.

Joints of the lower limb. Compounds of the pelvic bones together (the pubic symphysis) and the sacrum (sacroiliac joint). Pelvis in general, its division into large and small, the size and the angle of tilt of the pelvis, acquired in the anthropogenesis. Age, gender, individual features of the pelvis.

The joints of the lower limb. The hip joint. The knee joint. Compounds of the shin bone. The ankle joint. The joints of the foot. The arches of the foot.

Joints of radiological anatomy. Specific features of the structure of bone compounds according to their functions in a human body.

III. Scientific study of muscles – myology

Smooth skeletal, striated muscle tissue, specifics of development, structure and function. The origin of the muscles (brief detail about ontogenesis and anthropogenesis).

Muscle as organ, division into parts. Aponeuroses. The classification of muscles in shape, structure, origin and function. Muscles are synergists and antagonists. Auxillary devices of muscles: the fascia sheath (synovial) tendons, bursae, blocks for muscle tendon, tendon arc, bone-fibrous canals.

The concept of anatomical and physiological across muscles, the basic data on the strength and muscle work, the theory of leverage as a basis for understanding the function of the muscles.

P.F.Lesgaft - influence on the structure of the function of muscles, bones and joints.

Muscles and fascia of body. Classification of the trunk muscles in shape and origin. Segmental structure of trunk muscles. Surface (trapezius, latissimus dorsi, rhomboids, etc.) and deep (muscle, straightening the spine, etc.) back muscles. Thoracolumbar fascia

Chest muscles and fascia. Intercostal and other muscles. Diaphragm, its development, structure, topography, and

function. The participation of the chest muscles and diaphragm in breathing.

Abdominal muscle and fascia. Oblique, and transverse rectus abdominis. Rectus sheath. Pyramidal muscle. The inguinal canal. The white line, the umbilical ring. Lumbar quadrate muscle. Abs, its constituent elements. Topography of separated parts of the chest and abdomen.

Neck muscles and fascia. Classification of the neck muscles. Superficial muscles of the neck. Muscles located above (suprahyoid) and below the hyoid bone (subhyoid muscle). Deep muscles of the neck. Suboccipital muscles. Topography («Triangle») of the neck. Anatomy and Topography of plates (sheets) cervical fascia.

Muscles and fascia of the head. Muscles of facial expression and masticatory muscles. Features of the development, structure and functions of the muscles of facial expression and masticatory muscles.

The muscles of the upper limb. Muscles and fascia of the shoulder girdle. Muscles and fascia of the shoulder, forearm, wrist; palmar aponeurosis. Axilla, its topography, walls, quadrangular and triangular spaces. Cubital fossa. Radial and ulnar sulci. Bone-.fibrous canals; the flexor and extensor muscles; carpal canal, vagina (synovial) of the flexor tendons and extensor tendons of the fingers. Synovial bursa.

Muscles of the lower limb. Muscles and fascia of the lower limb zone (pelvic girdle). Muscles and fascia of the thigh, shin, foot. Muscle and vascular lacunae, their topography, content. The hip and adductor canals, popliteal fossa, cruropopliteal canal, superior and inferior musculofibular canals. Bursa and vagina (synovial) tendons of the lower extremity. Mechanisms that strengthen the arches of the foot, the foot torque: passive (ligaments), active (muscle).

The doctrine of body center of gravity. Analysis of the main positions and movements of the human body (standing, walking, running, jumping). Distinctive features of the structure of the musculoskeletal system of the person acquired in anthropology in relation to bipedal locomotion.

IV. Scientific study of internal organs – splanchnology

The development of the internal organs, serous membranes, brief details phylogenesis and ontogenesis. Formation of cavities of the body. The division of the internal organs in their topography, structure, and functions. General principles of the structure of hollow organs. The structure of the parenchymal organs. Glands: classification, development, structure and function.

Digestive system

Phylogenesis and ontogenesis of the digestive system. Primary digestive tube, its head and trunk region; anterior, middle and posterior intestine and their derivatives. The characteristic features of the structure of the digestive tube wall: mucosa, submucosa, muscular layer, external shell. The development, structure, and function of digestive glands, their classification.

Oral cavity, its walls, content; buccal cavity. The anomalies of the face and oral cavity-«cleft lip», «palate» and other organs of the mouth.

Teeth, parts of the tooth. The development and structure of the teeth. Baby teeth erupt and the timing of their loss. Permanent teeth. X-ray anatomy of the teeth. Interdigitation (bite); gingiva; malformations of the teeth.

Tongue: its division into parts, development, structure (mucosa, tongue muscles), functions, tongue tonsil. The role of the tongue in speech articulation. Mouth glands. Large salivary glands: parotid, submandibular, sublingual, buccal glands. Development, structure of salivary glands.

The soft palate: the muscles of the soft palate. Palatine tonsils.

Pharynx, its topography, part, structure, mucosa, fibrous base of the pharynx (pharyngobasilar fascia), the muscles of the pharynx. Fauces. The act of swallowing. Pharyngeal and tubular tonsils. Lymphoid ring (watch «Organs of hematopoiesis and immune system).

Esophagus, its topography, parts, walls. Narrowing of the esophagus. X-ray anatomy of the esophagus.

Stomach, its development and topography. The projection of the stomach to the anterior abdominal wall. Anatomical and x-ray nomenclature of stomach parts. The relationship of the stomach with adjacent organs. Changes in gastric syntopy depending on the position of the body. Anatomical (on the corpse) and x-ray form the stomach. The forms of the stomach of different body type people. Stomach ligaments. The structure of the stomach wall. Serous mucous stomach, its function: peristola peristalsis. The structure and topography of the gastric mucosa. X-ray and gastroscopic study of the stomach mucous membrane of a living being.

Small Intestine, parts, development. The duodenum, variants of its shape and position. X-ray anatomy of the duodenum. Anatomy and imaging of the mesenteric (jejunum and ileum) of the small intestine. Features of the structure of the mucosa and submucosa through the various departments of the small intestine: a circular folds, lymphoid nodules and lymphoid patches, big and small duodenal papilla. Muscular mucous. Serous mucous small intestine. Peristaltic pendulum motion and segmentation of the small intestine.

The large intestine: its location, department, development. The structure of the wall of the large intestine (mucosa, submucosa, muscular mucous, serosa) function.

The cecum, its location, shape. Ileocecal valve. Ileocecal foramen. Appendix, variants of its position; projection on the anterior abdominal wall.

The colon, part of it, their attitude to the peritoneum. Alternative positions.

The rectum, parts, structure, topography, and relevance to the peritoneum and to the pelvic diaphragm, the sphincter of the rectum and anal (anal) canal. X-ray of the colon: the shape and position of the large intestine various parts in a living human, anatomical and physiological sphincter of rectum.

Liver, its location, surface, parts, development, topography, shape, structure (lobes, segments of the liver, hepatic lobule) function; ratio to the peritoneum, the locking device of the liver (ligaments). Projection of the liver on the surface of body. Hepatic ducts and gallbladder, their structure and functions. Specifics of structure of the bloodstream of the liver (dual blood supply - hepatic artery, portal vein). X-ray anatomy of bile ducts and gall bladder.

Pancreas: parts, development, topography, structure, function, relation to the peritoneum. The ducts of the pancreas. The endocrine part of the pancreas.

Peritoneum, parts, differences of terms «abdomen» and «the peritoneal cavity». Topography of the parietal peritoneum within the anterior abdominal wall, its relation to the navel ring, inguinal and femoral canals. The derivatives of the peritoneum: the mesentery, large and small omentum; omentum bursa. Topography of abdomen on posterior wall of the abdomen and pelvic cavity. Ligaments, folds and fosses. Extra-, intra-and mesoperitoneal position of organs. Anomalies of position and fixation of the small and large intestine.

Respiratory system

Phylogenesis and ontogenesis of respiratory organs (lung airways). Superior and inferior respiratory airway. External nose. Nasal cavity. Paranasal sinuses. The nasal part of the pharynx.

Larynx. Topography. Structure: cartilage, ligaments, joints and muscles of the larynx, and their functions. The division of larynx cavity on the eve, the area of the glottis, infraglottic cavity. Vocal folds and folds of the vestibule, fibro-elastic membrane, elastic cone of the larynx. Glottis, laryngeal ventricle. The mechanisms of phonation. Laying down and straining apparatus of the larynx, joints, muscles, ensuring their function. Laryngoscope images of x-ray of larynx.

The trachea, bronchi, and their topography and structure.

Lungs, their development, shape, topography (syntopy, skeletopy), the structure, function. The elements of the root and porta of lungs. The branching bronchial tubes in the lung. Lobes bronchopulmonary segments and lobes of the lung. The structural and functional unit of the lung is acinus. The projections of the boundaries of lungs on the body surface. X-ray anatomy of the trachea, bronchi and lungs.

The pleura and its location. The development of the pleura, the visceral and parietal pleura. The pleural cavity. Pleural sinuses, their functional significance. The projection of the boundaries of the pleura on the surface of the body.

Mediastinum, its division into superior and inferior; division inferior mediastinum on the posterior, middle and anterior. Bodies located in different parts of the mediastinum.

Genitourinary apparatus

The location and the anatomical and topographical relationships of the urinary system. Phylogenesis and ontogenesis of the urinary and genital organs. Structure and function.

Urinary organs

Kidney, location, development, structure, function. Renal segments. Nephron is structural and functional unit of the kidney. Structural features of the bloodstream of the kidney. Topography (holotopy, syntopy, skeletopy) of the kidney and its relation to the peritoneum. Tunics of kidney; fixing apparatus of the kidney, renal sinus, the topography of the elements of renal pedicle. X-ray of the kidneys.

The urinary tract. Renal calices (small and large, fornical machine), renal pelvis.

Ureter, its parts, topography, relation to the peritoneum and to the blood vessels, the structure of the walls of the ureter, its restrictions, function.

Bladder: its development, shape, structure, wall structure. The ratio of the bladder to the peritoneum (depending on the functional state). Male and female urethra. X-ray anatomy of the urinary tract. Malformations of the urinary system.

Genitals organs

The development of external and internal genital organs. Homology of male and female genitals, anomalies of development (hermaphroditism). Structure and function of male and female sexual organs.

Male genitalia. The internal male genitalia. Testicle, topography and structure. The epididymis. Development and the process of testicular descent. The spermatic cord, its constituent elements. Vas deferens and ejaculatory ducts. The prostate gland. The seminal vesicles. Bulbourethral gland, their topography, structure. External male genitalia. Penis, its structure. The scrotum. Tunics of testicle. Female genitals. Female internal genitalia. Ovary, its topography, structure, relationship to the peritoneum. Cyclic and age-related changes in the ovary. Uterus, its topography, the shape, the parts related to the peritoneum, the structure of the wall of the uterus. Ligament of the uterus. Fallopian tube, its parts, topography, structure. Relation to the peritoneum. Vagina, vaginal vault, the structure of the vaginal walls. X-ray anatomy of the uterus, fallopian tubes. Vulva: large and small labia. Vestibule. Large and small vestibule glands. Clitoris. Annular hymen.

Features of the topography of the pelvic organs in both men and women.

Perineum: pelvic diaphragm, urogenital diaphragm, specifics of their structure in men and women (muscles, fascia). Ischio-rectal fossa, its walls.

Endocrine glands (glands without ducts)

The thyroid gland, development, topography, structure, and function.

Parathyroid glands, development, topography, structure, and function.

Hypophysis, its development and the structural features of the individual parts, topography, functions.

The pineal gland (epiphysis), the development, topography, structure, and function.

Adrenal gland cortex medulla. Development, topography, structure, and function of the adrenal gland. Additional adrenal glands. Para-aortic bodies, carotid glomus.

The endocrine part of the pancreas, the development, structure, and function.

Endocrine part of the gonads - the ovary, testicle.

V. Scientific study of vessels – angiology

General anatomy, development and function of the cardiovascular system. Heart. The lymphatic system. Extraorganic blood vessels. Arteries and veins. Microcirculation. Patterns of branching arteries and vein formation. The structure of the walls of the large, medium and small arteries, capillaries and veins. The relationship between the structure of the bloodstream and the body structure. Arterial, venous and arteriovenous anastomoses. Venous plexus. Roundabout (collateral) blood flow (in the arterial and venous streams) passages (or ways?).

Relationships between structure and function of the heart, blood vessels, the fetal circulation. The basic variants and anomalies (defects) of heart, large arteries and veins.

Circulatory System

Heart

The development of the heart. The shape and position of the heart within the chest cavity. The atria and ventricles, the structure of their walls. Endocardium, myocardium, epicardium. Heart valve is semilunar valves and clack valve. Papillary muscles. Conduction system of the heart, its nodes and beams. Arteries and veins of the heart. The projection of the boundaries of the heart and its foramens on the anterior chest wall. Age and typical anatomy of the heart. Pericardium, pericardial cavity, sinuses. X-ray anatomy of the heart and great vessels.

Arteries

Pulmonary artery branching inside the lung. Lobular and segmental arteries.

The arteries of the systemic circulation. The aorta and its development, topography, parts: the bulb of the aorta, the ascending aorta, aortic arch, descending aorta. Coronary arteries of the heart. The branches of the aortic arch.

Arteries of the head and neck. Common carotid artery and its topography. External carotid artery, and its topography, branches. The blood vessels of the brain and spinal cord. The arterial circle of the brain. Subclavian artery: topography, differences in the discharge of the right and left subclavian arteries, departments and branches of the subclavian artery. Anastomoses between the arteries of the head and neck.

Arteries of the upper limb; axillary artery, its topography, departments, branches, brachial, radial and ulnar arteries, their topography, branches, the projection on the external covers. Palmar (superficial and deep) arterial arc of wrist, arteries their formers, topography, and the projection on the surface of the palm.

The most important anastomoses between the branches of the subclavian, axillary, brachial arteries and other upper limb. The concept of inter and intra-system anastomoses. Thoracic part of the aorta, its parts, topography. Parietal and visceral branches, anastomoses between them.

The abdominal aorta, its topography, parietal and visceral branches. Anastomoses between the branches of the abdominal aorta.

The arteries of the pelvis and lower limbs. Common iliac artery, its topography, the division into external and internal iliac arteries. The internal iliac artery and its parietal and visceral branches anastomoses between them.

The femoral artery and its topography, branches. Anterior tibial artery, dorsal artery of the foot, their topography, branches. Posterior tibial artery and its topography, branches. Arterial arch of the foot; artery their formers. The projection of the main arteries in the lower limb external covers. Anastomoses between the branches of the femoral, anterior and posterior tibial arteries and other major arteries of the lower limbs. X-ray anatomy of the arteries. Variants of divergence and branching arteries of the human body. Designated clamping the artery to the bones to stop the bleeding and determine the pulse.

Veins

Structure and function of veins, their differences from the arteries. Basic laws of formation of the veins. Structural features of the separated parts of the venous stream (venous plexus, venous sinuses). Anatomical adaptations that ensure the promotion of blood through the veins to the heart. Veins accompanying the arteries and veins following on their own. X-ray anatomy of the veins.

Pulmonary veins. Superior caval vein; inflows, the topography, the projection on the surface of the chest wall. Veins of the brain. The connections between the intracranial and extracranial veins. Superficial and deep veins of the head and neck. Internal, external and anterior jugular veins, their inflows, topography, and the projection on the external covers.

Brachiocephalic veins, their formation, topography. Subclavian vein, inflows, topography. Superficial and deep veins of the upper limb. Axillary vein, its topography, inflows.

Intercostal vein. Vertebral venous plexus.

Inferior caval vein, its formation. Superficial and deep veins of the lower limbs. External iliac vein. Parietal and visceral veins of the pelvis. The internal iliac vein. Visceral veins, which are the inflows of inferior caval vein. Anastomoses between inflows superior and inferior caval veins are cava-caval anastomoses.

Portal vein; its topography, inflows. Anastomoses of the portal vein and its tributaries superior and inferior caval veins: porto-caval anastomoses.

Structural features of the blood stream of separated organs: brain, heart, lungs, liver, spleen, kidney, endocrine glands, due to their structure and function.

The lymphatic system

Structure and function of the lymphatic system. The development of the lymphatic system, its relationship with the venous system. The roots of the lymphatic system are the lymph capillaries, their structure and the difference from the blood capillaries, function. Structural features of the network of lymphatic capillaries of various organs. Lymphatic vessels. Intraorgan and extraorgan plexus and lymph vessels. Large lymphatic vessels, the main lymph collectors. Individual and age-specific anatomy of the major lymphatic vessels and lymph nodes topography lying on the path of lymph flow. Factors providing movement of lymph.

The thoracic duct, it's origin, formation, topography, right lymphatic duct and the subclavian trunk. Jugular trunk. Confluence of the major lymphatic trunks in the veins in the lower divisions.

Superficial and deep lymphatic vessels inferior limbs. Popliteal and inguinal lymph nodes. Parietal and visceral lymph nodes in the pelvis and abdomen. Ways of outflow of lymph from the pelvic and abdominal cavity. The lymphatic vessels and lymph nodes (glands) of the stomach, small intestine and large intestine (colon), liver, kidney and uterus.

Parietal and visceral lymph nodes of the chest cavity. Paths of lymph outflow from the lungs, heart, esophagus.

Superficial and deep lymphatic vessels of the upper extremity. Elbow and axillary lymph nodes. The outflow tract of the breast gland. Superficial and deep lymph nodes (glands) of the neck. The outflow tract of the tongue.

Bypath (collateral way) outflow tract of the lymph. X-ray of the lymphatic system.

VI. Hematopoietic organs and the immune system

Bone marrow, development, structure, and function. Red bone marrow. yellow bone marrow.

Central and peripheral organs of the immune system. Bone marrow, thymus, development, topography, structure, functions.

Lymphoid nodules of the esophagus, stomach, small intestine and colon and appendix, respiratory and urinary ducts. Lymphoid plaques: the development, topography, structure, and function.

Tonsils, lymph nodes - as organs of immune origin. Development, topography, structure, and function.

The spleen: development, topography, structure, and function.

VII. Nervous system – neurology

A functional characteristic of the nervous system in light of Pavlov's doctrine and physiological P.K.Anohin (functional systems).

The leading role of the nervous system in the body, its importance for the function of organs in the union of body parts into a whole, and in the establishment of links of the organism and the environment, summary of the phylogenesis and ontogenesis of the nervous system.

The elements of the structure of the nervous system.

Neuron. Neurology. Gray and white matter of the brain and spinal cord; core nodes (nerve ganglia). Nerve fiber bundles and roots. Centers of different functions in the cerebral cortex of the brain and pathways. Elementary and integration aids the brain and spinal cord.

Division of the nervous system according to the development, structure and function of the central and peripheral, as well as somatic and vegetative (autonomic).

Central nervous system

The spinal cord and its tunics. Shape, topography, internal structure - gray, white matter, the center channel. The segment of the spinal cord. The roots of new cerebrospinal nerves, spinal nodes. The formation of the spinal nerves.

Brain. Parts of the brain. Topography of the cranial nerves in the base of the brain.

Telencephalon. Hemisphere of the brain. Lobe. Sulci and gyri. Rhinencephalon

The lateral ventricles. The corpus callosum, fornix and anterior commissure. Basal ganglia, internal capsule.

Diencephalon. Thalamus, epithalamus, metathalamus. The hypothalamus, nuclei of the hypothalamus. The third ventricle. Vascular base of the third ventricle.

Mesencephalon, parts. The roof of mesencephalon, its structure. Peduncle of the brain, its structure. The nuclei and pathways mesencephalon. Aqueduct

Metencephalon. Pons, the surface internal structure. The nuclei and pathways. Cerebellum, its shape, surfaces, the internal structure. The nuclei of the cerebellum. Peduncles of the cerebellum, their composition.

Rhombencephalic isthmus, parts.

Myelencephalon: surfaces, internal structure. The nuclei and pathways. The fourth ventricle. Vascular basis of the fourth ventricle.

Rhomboid fossa, its topography. The topography of the nuclei of the cranial nerves.

The topography of white and gray matter of the brain on the front. of horizontal and sagittal sections.

Pathways of the central nervous system.

The reflex arc as the basic anatomical and physiological unit of the nervous system. A simple reflex arc, short-circuit within the lower parts of the central nervous system (spinal cord). Complex reflex arc.

Anatomical and functional classification of pathways of the central nervous system.

1. Associative path, short and long.
2. Commissural path.
3. Projective path:
   a) ascending (afferent) fibers system
   b) descending (efferent) fiber system (pyramidal and extrapyramidal paths).

The spinal cord and brain (solid, web, soft). Their development, topography, structure. Subarachnoid space. The paths of the outflow of cerebrospinal fluid.

The peripheral nervous system

General anatomy of the cranial and spinal nerves, and their formation. Segmental distribution of the peripheral nerves. Nerve structure, composition. Neurovascular sheath.

The cranial nerves

General characteristics and classification of the cranial nerves. Their development due to sense organs (I, II, VII, a pair), myotomes of head somites (III, IV, VI pairs) with brachial arches (V, VII, IX, X, XI pair), and based on the spinal nerves (XII pair).

Connection of cranial nerves autonomic nervous system. Nerves containing fibers of the parasympathetic autonomic nervous system.

Characteristic features and some of the cranial nerves: nuclei, nerve topography, branches, areas of innervation, the projection on the external covers, connections with other nerves. Anatomy I and II pairs of cranial nerves. Anatomy III, IV, VI pairs of cranial nerves.

The trigeminal nerve (V pair), its sensory and motor roots. Trigeminal node. Topography of the branches of the trigeminal nerve innervation area, due to the vegetative nodes (pterygopalatine, ear, submandibular).

The facial nerve (VII pair), its topography, branches and areas of innervation. Intermediate nerve junction. Relationship of the intermediate nerve to the facial nerve.

Vestibulo-cochlear nerve (VIII pair), part (vestibular and cochlear). Their components (the vestibular and spiral) and branches.

Glossopharyngeal (IX pair) and vagus (X pair) nerves, their topography, units, branches and areas of innervation. Autonomic fibers in the glossopharyngeal and vagus nerves, their origin and the area of innervation.

The accessory nerve (XI pair), its topography, branches and areas of innervation. Hypoglossal nerve (XII pair), its origin, topography, areas of innervation, the relationship with the cervical plexus.

Spinal nerves

Spinal nerve and its branches: anterior, posterior, meningeal, connective.

Posterior branches of the cervical, thoracic, lumbar, sacral, and coccygeal spinal nerves. Anterior branches of the spinal nerves, education plexus. Compound of spinal nerves with the autonomic nervous system.

Cervical plexus, its formation, structure, topography. Branches (nerves) of the cervical plexus, phrenic nerve.

The brachial plexus, its formation, structure, topography. Short and long branches of the brachial plexus: supraclavicular and infraclavicular part. Areas of innervation. Cutaneous nerves of the arm and forearm, and their projection on the external covers. Musculocutaneous nerve, median nerve, ulnar nerve, radial nerve, and their formation, topography, projection on the external covers. Patterns of innervation of the separated muscle groups and areas of the upper limb. Topographic and anatomic relationships of the nerves and blood vessels of the upper limb. Intercostal nerves, their topography and areas of innervation.

The lumbar plexus and its formation, structure, topography. Short and long branches. The obturator nerve, femoral nerve, their topography and branching, areas of innervation, the projection on the external covers.

The sacral plexus. Its formation, structure, topography. Short and long branches. Gluteal and posterior femoral cutaneous nerve, the area of their branching. The sciatic nerve, its topography and branches. The tibial and common peroneal nerves, their branches projection on the external covers. Innervation of the separated muscle groups and areas of the skin of the lower limb. Coccygeal nerve, the coccygeal plexus, its topography, branches, areas of innervation.

The vegetative (autonomic) nervous system

Laws of the structure and function of the autonomic nervous system, its division by the sympathetic and parasympathetic parts. Centers of the autonomic nervous system in the brain and spinal cord. Peripheral parts of the autonomic nervous system. The origin (phylogenesis and ontogenesis), topography and fiber paths of the autonomic nervous system.

The sympathetic part of the autonomic nervous system centers in the spinal cord, sympathetic trunk, the nodes of the sympathetic trunk. Nerves extending from the cervical, thoracic, lumbar and sacral sympathetic trunk. Autonomic plexus along the major blood vessels of the head and neck (internal carotid, external carotid plexus, etc.). Vegetative plexus of the chest cavity (thoracic aortic plexus, esophageal, lung, cardiac plexus). Vegetative plexus of the abdomen and pelvis, celiac, abdominal aortic, superior and inferior mesenteric, renal, adrenal, superior and inferior hypogastric, etc.

The parasympathetic part of the autonomic nervous system. Centers in the brain and spinal cord. Peripheral part: the vagus and pelvic splanchnic nerves.

The innervation of the head and neck, the innervation of the heart and lungs. The innervation of the esophagus, stomach, intestines, liver, pancreas, spleen, adrenal gland and pelvic organs.

VIII. Scientific study of sense organs – esthesiology

Anatomical and functional characteristics of sense organs

Peripheral - perceptive and conductive parts, cortical centers analyzers, their functional unity (Ivan Pavlov).

Organ of vision, brief details about phylogenesis and ontogenesis. Topography, structure, and function. Eyeball. Tunics of the eyeball: fibrous, vascular, internal (sensitive, the retina). Eyeball Camera: anterior, posterior. Vitreous, lens. Aqueous humor. Accommodative apparatus of the eye. Subsidiary organs of the eye: eyelids, conjunctiva. Extraocular muscles, fascia orbit. Lacrimal apparatus: lacrimal gland, lacrimal canaliculus, lacrimal sac, nasolacrimal duct. Pathways of visual impulses and pupillary reflex.

Vestibulo-cochlear organ. Summary of the phylogenesis and ontogenesis. Structure and function. Division of vestibulo-cochlear organ on the outer, middle and inner ear.

Anatomy and topography of the outer and middle ear. Connection of the middle ear with the nasopharynx. Anomalies. The inner ear, the membranous and bony labyrinth, a structure and topography. The mechanism of perception and the way of sound. Pathways of hearing organs and balance.

Olfactory organ. The olfactory region of the nasal mucosa. Pathways of the olfactory organ.

Organ of taste. Tongue taste buds, their topography. The pathways of organ of taste.

Total cover - skin. The development, structure, and function. Types of skin sensitivity: touch, pain, temperature and other derivatives of the skin. Mammary gland.

5. Teaching forms and techniques

- Traditional knowledge of anatomical and visual aids.
- Multimedia lectures
- Solving situational tasks
- Execution of written works (essays on the specified or free topic, reports).
- Individual work.
- Making course paper.

6. Teaching and learning materials for students' individual work. Forms of current and interim assessment.

6.1. Outline of students' individual work

№	Topic	Type of individual work	Task	Suggested reading material	Hours
Semester I					
1	Anatomical terminology. The axes and planes in anatomy. The structure of the bones. The structure of a typical vertebra.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	1
2	The structure of the cervical, thoracic, lumbar vertebrae.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	1

№	Topic	Type of individual work	Task	Suggested reading material	Hours
2	The structure of the sacrum, coccyx, sternum, ribs.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	1
3	The structure of the scapula, clavicle, humerus.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
4	The structure of the bones of the forearm and hand.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
4	The structure of the pelvic bone, the femur.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
5	The structure of the bones of the leg and foot.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
6	The control class in osteology.	Preparation for class study	Preparing for a job interview, a practical test, testing on materials of the whole partition	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	1
6	Vertebral joints. Joints between cranium and spinal column. Spinal column in common.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
7	Joints of ribs and sternum. Thorax in common.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
8	Joints of the upper limb.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2

№	Topic	Type of individual work	Task	Suggested reading material	Hours
8	Joints of the lower limb.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
9	The control class in arthrology.	Preparation for class study	Preparing for a job interview, a practical test, testing on materials of the whole partition	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	1
10	General view of skull. The occipital, parietal, frontal bone.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
10	The structure of the sphenoid, ethmoid and temporal bones.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
11	The structure of the facial bones of the skull.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
12	Vault and base of the skull. Orbit, pterygopalatine, temporal and infratemporal fossa. Bone base of the nasal cavity and mouth. Skull of a newborn.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
12	The control class in craniology.	Preparation for class study	Preparing for a job interview, a practical test, testing on materials of the whole partition	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	1
13	Muscle, fascia and the topography of the head.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
14	Muscle, fascia and the topography of the neck.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2

№	Topic	Type of individual work	Task	Suggested reading material	Hours
14	Muscle, fascia and the topography of the chest, abdomen and back	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
15	Muscles, fascia and the topography of the upper limb	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	1
16	Muscles, fascia and the topography of the lower limb	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	1
16	The control class in myology	Preparation for class study	Preparing for a job interview, a practical test, testing on materials of the whole partition	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	1
17	Defense of the course work	Preparation for class study	Preparing for the protection of the course work	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	1
Semester II					
1	The cavity of the mouth, lips and cheeks. Hard and soft palate, pharynx. Permanent and deciduous teeth	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	1
1	Tongue. Salivary glands. Pharynx. Lymphoepithelial ring	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	1
2	Esophagus. Stomach.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	1
2	The small intestine. Mesentery.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	1

№	Topic	Type of individual work	Task	Suggested reading material	Hours
3	The large intestine	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
3	Liver. The gall bladder and bile duct. The pancreas. The spleen.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
4	The peritoneum and its derivatives. Peritoneal cavity.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
4	External nose, nasal cavity. Larynx. The thyroid and parathyroid glands.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
5	The trachea. Bronchi. The lungs.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
5	The pleura. The pleural cavity. Mediastinum. The thymus gland.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
6	Kidney. The adrenal glands. Ureters. The bladder. Female urethra	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
6	Testicle. The epididymis. The vas deferens. The spermatic cord. The seminal vesicles. The prostate gland. Bulbourethral gland	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
7	Penis. Male urethra.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2

№	Topic	Type of individual work	Task	Suggested reading material	Hours
7	Ovary. Appendages of the ovary. The uterus. Fallopian tubes. Vagina.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
8	Female external genitalia. Perineum	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
8	Splanchnology – testing. Independent work with aids	Preparation for class study	Preparing for a job interview, a practical test, testing on materials of the whole partition	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	1
9	The control class in splanchnology	Preparation for class study	Preparing for a job interview, a practical test, testing on materials of the whole partition	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	1
9	The spinal cord and intermeningeal spaces. Blood supply of the spinal cord	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
10	General view of the brain. The exit site of the cranial nerves. Medulla	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
10	Hindbrain: the bridge, the cerebellum. Rhomboid fossa. The fourth ventricle.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
11	Midbrain. Diencephalon. Hypophysis. Epiphysis. Third ventricle.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
11	Telencephalon. Hemisphere of the brain, their lobes sulci and gyri. The olfactory brain.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2

№	Topic	Type of individual work	Task	Suggested reading material	Hours
12	Subcortical nuclei. White matter hemisphere. The lateral ventricles.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
12	Brain matters and intermeningeal space. Organs of development and outflow pathways of cerebrospinal fluid. Sinuses of the dura mater. Blood supply of the brain.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
13	CNS pathways. Afferent pathways of CNS	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
13	Efferent pathways of CNS	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
14	Sense organs. The organ of sight. Eyeball.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
14	Subsidiary organs of the eye. The visual pathway.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
15	Vestibulocochlear organ External, middle ear.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
15	Internal ear. Auditory and vestibular pathways.	Preparation for class study	Preparing for a job interview, a practical test, testing on materials of the whole partition	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2
16	Organ of taste. Olfactory organ. The skin and its derivatives. Mammary gland.	Preparation for class study	Preparing for a job interview, a practical test, testing on materials of the whole partition	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	2

№	Topic	Type of individual work	Task	Suggested reading material	Hours
16	CNS and sense organs – testing. Independent work with aids	Preparation for class study	Preparing for the protection of the course work	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	1
17	The control class in CNS and sense organs.	Preparation for class study	Preparing for the protection of the course work	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	1
17	Defense of the course work	Preparation for class study	Preparing for the protection of the course work	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	1
Semester III					
1	Heart - external and internal structure, topography, blood vessels and nerves. The pericardium and its cavity	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	0.3
2	The arteries of the head and neck. Common and external carotid arteries	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	0.3
2	The internal carotid artery, subclavian artery. The blood supply of the brain and spinal cord.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	0.3
3	The veins of the head and neck. Anastomoses of intra-and extracranial veins, superficial and deep veins of the face.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	0.3
4	I-IV, VI cranial nerves	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	0.3
4	V cranial nerve	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	0.3

№	Topic	Type of individual work	Task	Suggested reading material	Hours
5	VII-X cranial nerves	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	0.3
6	XI-XII cranial nerves. Cervical plexus.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	0.3
6	Overview of the innervation and blood supply of the head and neck.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	0.3
7	The control class in angioneurology of the head and neck	Preparation for class study	Preparing for a job interview, a practical test, testing on materials of the whole partition	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	0.7
8	Arteries and veins of the upper limbs	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	0.3
8	The brachial plexus and its branches.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	0.3
9	Arteries and veins of the lower limbs.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	0.3
10	The lumbar plexus and its branches.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	0.3
10	The sacral plexus and its branches.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	0.3

№	Topic	Type of individual work	Task	Suggested reading material	Hours
11	Overview of the innervation and blood supply of the limbs.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	0.3
12	The control class in angioneurology of limbs.	Preparation for class study	Preparing for a job interview, a practical test, testing on materials of the whole partition	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	0.9
12	Aorta and its parts. The branches of arch, thoracic and abdominal aorta. The blood supply of the abdominal cavity.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	0.3
13	Common, external and internal iliac arteries and their branches. Blood supply of the pelvic organs	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	0.3
14	The upper and lower vena cava, their roots and ducts. Cava-caval anastomoses	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	0.3
14	Portal vein, its roots, inflows. Porto-caval anastomoses. The fetal circulation. Features of the restructuring of the vascular bed after birth.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	0.3
15	Lymphatic drainage from the head, neck and limbs.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	0.3
16	The outflow of lymph from the walls of the cavities and organs of the chest and abdominal cavities.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	0.3
16	The autonomic nervous system: general view, difference from the somatic part of the nervous system. Parasympathetic part of the autonomic nervous system.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	0.3

№	Topic	Type of individual work	Task	Suggested reading material	Hours
17	Sympathetic department of the autonomic nervous system. Overview of the autonomic innervation of the organs.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	0.3
18	Overview of the innervation and blood supply of the internal organs.	Preparation for class study	Preparing for a job interview and testing of practical skills relating to classes	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	0.3
18	The control class on angioneurology of internal organs and the walls of the cavities.	Preparation for class study	Preparing for a job interview, a practical test, testing on materials of the whole partition	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	0.3
19	The repetition of the material from I and II semesters	Preparation for class study	Preparing for a job interview, a practical test on the course material	Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010.	0.3

6.2. Instructional guidance for individual students' work

Core Requirements for Course Paper Layout

1. Library research paper:

1.1. Volume – not less than 20 pages' format A4.
1.2. The plan should be presented at the beginning of work.
1.3. At the end of work there should be a list of references – not less than 10 sources, among them – not less than 2 journal articles (Russian or foreign ones).
1.4. It is possible to include some explanatory illustrations.
1.5. Presentation (PowerPoint) for submitting of oral report.

2. Visual aids (drawing or scheme):

2.1. Format – A1 (a Whatman paper sheet).
2.2. Drawing color, equipped with explanatory captions (font – Arial, 36 pt, regular) directly below (without digital footnotes) and the headline, located at the bottom of the page (font – Arial, 72 pt, Bold).
2.3. Required explanatory note of not less than 3 format A4 pages describing the pattern or scheme.
2.4. Glossy lamination.
2.5. The poster should be equipped with a device for mounting (rail).

3. Visual aids (X-ray-image):

3.1. Format – JPG or TIFF.
3.2. Drawing scale – not less 3000 x 2000 pt.
3.3. Resolution – not less 300 dpi.
3.4. Required explanatory note of not less than 3 format A4 pages describing the pattern or scheme.
3.5. Presentation (PowerPoint) for submitting of oral report.

4. Anatomical preparation:

4.1. The preparation should be finished and suitable for the educational process or anatomical museum.
4.2. Required explanatory note of not less than 3 format A4 pages describing the methods of the preparation production and a description of the preparation itself.
4.3. Presentation (PowerPoint) for submitting of oral report.

6.3. Current and interim assessment materials

Competence development assessment

№	Type of assessment	Topics (parts) assessed	Competences and elements assessed
1.	Test assessment	Part 1, 2, 3, 4, 5, 6, 7, 8, 9	GC-1, GPC-1, GPC-7, GPC-9
2.	Assessment of practical skills	Part 1, 2, 3, 4, 5, 6, 7, 8, 9	GC-1, GPC-1, GPC-7, GPC-9
3.	Workbook assessment	Part 1, 2, 3, 4, 5, 6, 7, 8, 9	GC-1, GPC-1, GPC-7, GPC-9
4.	Discussion	Part 1, 2, 3, 4, 5, 6, 7, 8, 9	GC-1, GPC-1, GPC-7, GPC-9
5.	Term paper	Part 1, 2, 3, 4, 5, 6	GC-1, GPC-1, GPC-7, GPC-9

Demo variant of test

1. Indicate the main functions of the human skeleton.
A. Hematopoietic.
B. Support.
C. Protection.
D. Locomotor.

2. What is the base unit of bones?
A. Ossein.
B. Osteon.
C. Red bone marrow.
D. Osteocyte.

3. Point out the component parts of the vertebrae.
A. Processus articulares.
B. Arcus.
C. Processus coronoideus.
D. Corpus.

4. Point out the processes, which have the vertebrae.
A. Processus styloideus.
B. Processus spinosus.
C. Processus articulares superiores.
D. Processus transversus.

5. Indicate the anatomical structures that are common for the typical cervical vertebrae.
A. Foramen processus transversus.
B. Massae laterales.
C. Bifid at the end of processus spinosus.
D. Processus mamillaris.

6. Indicate the anatomical structures of the first cervical vertebra.
A. Massae laterales.
B. Processus accessorius.
C. Fovea dentis.
D. Arcus posterior.

7. Indicate the anatomical structures of the second cervical vertebra.
A. Arcus anterior.
B. Apex dentis.
C. Dens.
D. Facies articularis anterior.

8. Which anatomical structures are characteristic features for typical thoracic vertebrae?
A. Foveae costales superiores et inferiores.
B. Processus costotransversarius.
C. Foveae costalis processus transversus.
D. Processus accessorius.

9. Which thoracic vertebrae have got whole rib notches on the body?
A. Vertebra thoracica I.
B. Vertebra thoracica X.
C. Vertebra thoracica XI.
D. Vertebra thoracica XII.

10. Point out the processes that are only found on the lumbar vertebrae.
A. Processus transversus.
B. Processus accessorius.
C. Processus articulares superiores.
D. Processus articulares inferiores.

11. Indicate the anatomical structures of the dorsal surface of the sacrum.
A. Crista sacralis mediana.
B. Lineae transversae.
C. Canalis sacralis.
D. Hiatus sacralis.

12. Specify the parts of the rib.
A. Caput.
B. Collum.
C. Corpus.
D. Cartilago costalis.

13. Where particularly does the sulcus arteriae subclaviae pass on the first rib?
A. Behind the tuberculum costae.
B. Behind the tuberculum musculi scaleni anterioris.
C. Ahead tuberculum musculi scaleni anterioris.
D. On the tuberculum costae.

14. Indicate the parts of the sternum.
A. Corpus.
B. Processus styloideus.
C. Manubrium.
D. Incisura clavicularis.

15. Point out the location of the angulus sterni.
A. The connection between the handle to the body.
B. The junction of the body with the xiphoid process.
C. At the level of the middle of the body.
D. At the level of the jugular notch of sternum.

16. Which anatomical structures are located on the manubrium of sternum?
A. Facies costalis.
B. Incisura jugularis.
C. Incisura clavicularis.
D. Incisura costalis.

17. Indicate the main departments of the skeleton membri superioris.
A. Cingulum.
B. Brachium.
C. Manus.
D. Skeleton membri superioris liberi.

18. Indicate the main departments of the skeleton membri superioris liberi.
A. Antebrachium.
B. Humerus.
C. Ossa manus.
D. Brachium.

19. What bones form the cingulum membri superioris?
A. Sternum.

B. Clavicula.
C. Humerus.
D. Scapula.

20. What anatomical structures are located on the dorsal surface of the scapula?
A. Processus acromialis.
B. Fossa supraspinata.
C. Processus coracoideus.
D. Spina scapulae.

21. What anatomical structures are located at the area of the lateral angle of the scapula?
A. Facies articularis acromialis.
B. Fossa infraspinata.
C. Cavitas glenoidalis.
D. Tuberculum supraglenoidale.

22. What anatomical structures are located on the acromial end of the clavicle?
A. Facies articularis acromialis.
B. Tuberculum conoideum.
C. Linea trapezoidea.
D. Facies articularis sternalis.

23. Point out the anatomical structures of the proximal end of the humerus.
A. Collum anatomicum.
B. Epicondylus lateralis.
C. Sulcus intertubercularis.
D. Caput humeri.

24. Which body surface of humerus does the sulcus nervi radialis pass?
A. Facies medialis.
B. Facies lateralis.
C. Facies anterior.
D. Facies posterior.

25. Point out the anatomical structures of the distal epiphysis of the humerus.
A. Trochlea humeri.
B. Tuberculum majus.
C. Sulcus nervi ulnaris.
D. Fossa olecrani.

Criteria for assessing of the test

"Excellent" ("5") – 91% or more correct answers to test items.
"Good" ("4") – 81-90% of correct answers to test items.
"Satisfactory" ("3") – 71-80% of correct answers to test items.
"Disappointing" ("2") – 70% or less correct answers to test items.

Sample questions of practical skills

Osteology

Show and name in Latin

1. Acromion.
2. Anatomical neck of the humerus.
3. Trochlea of humerus
4. Trochlea of the talus.
5. Trochlear notch of ulna

Arthrology

Show and name in Latin

1. Acromioclavicular joint.
2. The greater sciatic foramen.
3. The upper transverse ligament of the scapula.
4. Internal intercostal membrane.
5. Deep transverse metatarsal ligament.

Craniology

Show and name in Latin

1. Greater palatine foramen.
2. Sulcus upper petrosal sinus.
3. Sulcus inferior petrosal sinus.
4. Sulcus of the transverse sinus.
5. Sulcus sigmoid sinus.

Myology

Show and name in Latin

1. Major pectoral muscle
2. Major teres muscle
3. Major adductor muscle
4. Major zygomatic muscle
5. Gluteus maximus muscle.

Splanchnology

Show and name in Latin

1. Ampulla of the fallopian tube.
2. Great omentum
3. Large duodenal papilla.
4. Greater curvature of the stomach.
5. Coronary ligament of the liver.

Central nervous system

Show and name in Latin

1. Pale globe
2. The vagus nerve (the exit site of the brain).
3. The lateral ventricle, the posterior horn.
4. The lateral ventricle, inferior horn.
5. The lateral ventricle, anterior horn.

Angioneurology of the head and neck

Show and name in Latin

1. Basilar artery.
2. The vagus nerve (in the neck).
3. Great auricular nerve.
4. Coronal sulcus of the heart.
5. Superior laryngeal nerve.

Angioneurology of the limbs

Show and name in Latin

1. Circumflex artery of scapula
2. Genitofemoral nerve
3. Femoral artery.
4. The femoral vein.
5. The femoral nerve (in the abdominal cavity)

Angioneurology of walls of cavities and internal organs

Show and name in Latin

1. Greater splanchnic nerve.
2. Superior mesenteric plexus.
3. Superior hypogastric plexus.
4. The superior mesenteric artery.
5. The superior mesenteric vein.

Criteria for assessing of the practical skills

“Excellent” (“5”) – 91% or more correct answers to test items.
“Good” (“4”) – 81-90% of correct answers to test items.
“Satisfactory” (“3”) – 71-80% of correct answers to test items.
“Disappointing” (“2”) – 70% or less correct answers to test items.

Sample questions for control classes

Osteology

1. Axis and planes of the human body. Topographical lines on the surface of the thorax.
2. Skeletal system and its functions. Parts of the skeleton.
3. Classification of bones.
4. Bone as an organ
5. Stages of development of the skeleton in phylogenesis and ontogenesis.

Craniology

1. Skull sections and their bones
2. Facial skeleton: bones, individual variability.
3. Cerebral cranium: bones, individual variability.
4. Abnormal skull shapes.
5. Stages of evolution of the skull.

Arthrology

1. Types of bone connections. Age-related changes.
2. Continuous and semi intermittent compounds of bones.
3. Intermittent compounds. Major and minor elements of the joint.
4. Classification of joints according to the number of axes of motion and shape of the articular surfaces.
5. Classification of joints by number mating surfaces on the functional sign.

Myology

1. The structure of the skeletal muscle.
2. Muscular system: general characteristics, role in the body.
3. Classification of muscles according to shape, location of muscle bundles, functions.
4. The development of skeletal muscles.
5. Auxillary device of muscles

Splanchnology

1. General principles of the structure of the internal organs.
2. The topography and variability of the internal organs.
3. Developmental abnormalities, their classification.
4. The development of the digestive system.
5. Oral cavity: parts, walls, age peculiarities, anomalies.

Anatomy of central nervous system and sense organs

1. Nervous system: departments, functions, structural and functional unit - the neuron.
2. The reflex arc as the main principle of the nervous system.
3. The development of the nervous system in the phylogeny.
4. The development of the human nervous system.
5. Spinal cord topography, departments, external structure.

Angioneurology of the head and neck

1. Cardiovascular system: general anatomy. Circulation.
2. Microcirculation: structure, age peculiarities. Collateral circulation.
3. Artery. The development of the arterial system. Classification of the arteries. The structure of the walls of the arteries.
4. Laws of the course and branching of arteries.
5. The venous system. The structure of the vein walls. Classification of veins. Venous plexus. Anastomoses.

Angioneurology of the limbs

1. Axillary artery: topography, departments, branches, areas of blood supply.
2. Brachial artery: topography, branches, areas of blood supply.
3. The arterial network of the elbow joint
4. Forearm arteries: the topography of the ulnar and radial arteries and their branches in the forearm blood supply to the area.
5. The arterial network of the wrist.

Angioneurology of the cavities and internal organs

1. The branches of the thoracic aorta, the area of their blood supply.
2. The branches of the abdominal aorta, the area of their blood supply.
3. Celiac trunk: topography, branches, areas of blood supply, the anastomoses.
4. Superior mesenteric artery: topography, branches, areas of blood supply, the anastomoses.
5. Inferior mesenteric artery: topography, branches, areas of blood supply, the anastomoses.

Criteria for assessing of the interview in control classes

"Excellent" - the story complete, competent, logical; anatomical structures are shown on the preparations quickly and confidently; fluency in anatomical terminology; answers to additional questions clear brief.

"Good" - the story is not enough to single logical errors in particular; lack of confidence and speed in the demonstration of anatomical formations on preparations; single error in the Latin terminology; answers to additional questions correct, clear enough.

"Satisfactory" - the story is not enough literate, part-time, with errors in the details; uncertainty in the demonstration of anatomical structures; errors in Latin terminology; answers to additional questions is not enough clear, with errors in particular.

"Disappointing" - the story of an illiterate, incomplete, with gross errors; errors in the demonstration of anatomical structures; ignorance of the Latin terminology; answers to additional questions wrong.

Sample examination questions

Osteoarthrology

1. Skeletal System. Parts of the skeleton. The mechanical and biological functions of the skeleton.
2. Bone as an organ. Classification and structure of the bones, their blood supply and innervation.
3. Stages of the skeleton development. Ossification centers - primary, secondary and supplementary, the timing of their appearance. Synostosis in the skeleton. The concept of bone age. Endogenous and exogenous factors affecting the development and growth of bones.
4. Vertebrae. The structure of a typical vertebra. Differences between the various departments of the vertebral spine. Abnormal development of the vertebrae.
5. The sacrum and coccyx: structure, anomalies

Myology

1. Muscular system: general characteristics, role in the body. The structure of the skeletal muscle. The blood supply and innervation of muscles.
2. The classification of muscles.
3. The development of skeletal muscles. Anomalies.
4. Basic concepts of biomechanics of the muscles. The strength and speed of muscle contraction and their relation to the structural features of the muscles. The ratio of muscle to the joints. Muscles - prime movers, antagonists and synergists.
5. Auxiliary device of muscle: fascia, bursa, tendon sheath, muscle blocks, the sesamoid bones.

Splanchnology

1. Systems of internal organs and their functional meaning. Types of organs. The structure of the hollow and parenchymal organs. The main terms of topography: Holotopy, skeletotopy and syntopy.
2. Variability of shape, topography and structure of the internal organs according to age, sex and body type (examples). Classification of anomalies.
3. Digestive system: functional meaning, departments, development.
4. Oral cavity, its departments. Lips, cheeks: structure, blood supply, innervation, lymphatic outflow, anomalies.
5. Palate: departments, muscles, blood supply, innervation, anomalies.

Angiology

1. Cardiovascular system: the role in the body, departments. Circulation, its history of discovering
2. Heart: external structure, topography, abnormal position.
3. The development of the heart. Malformations of the heart.
4. The structure of the heart chambers. Abnormalities of heart structure.
5. The structure of the walls of the heart. Conductive atrio-ventricular system.

Lymphology

1. The lymphatic system: functions, morphofunctional specifics, structural units.
2. Thoracic duct: Development, parts, topography, inflows.
3. Right lymphatic duct: development, topography.
4. Lymphatic vessels and nodes of the lower limbs.
5. Lymphatic vessels and nodes of the walls of the pelvis and pelvic organs.

Neurology

1. The nervous system: the role in organism, stages of evolution. Parts of the nervous system of human and their general characteristics.
2. Structural and functional elements of the nervous system. Neurons: structure, classification of both form and function. The concept of the synapse.
3. The development of the nervous system in ontogenesis.
4. The development and growth of the brain during the postnatal period. Mass brain, its sex and individual variations.
5. Spinal cord external structure, topography, anomalies

Aesthesiology

1. The sense organs, as peripheral parts of the analyzers, their classification and general characteristics.
2. The organ of sight. Eyeball. Tunics of the eyeball: structure, blood supply, innervation, developmental abnormalities.
3. The internal environment of the eyeball: eye camera, lens, vitreous body. Outflow ducts of intraocular fluid.
4. Subsidiary organs of the eye. Extraocular muscles: structure, function, innervation. Fascia orbit.
5. Eyelids, conjunctiva: structure, blood supply, innervation, anomalies. Lacrimal apparatus.

Criteria for assessing of the interviews on the exam

"Excellent" - the story complete, competent, logical; anatomical structures are shown on the preparations quickly and confidently; fluency in anatomical terminology; answers to additional questions clear brief.

"Good" - the story is not enough to single logical errors in particular; lack of confidence and speed in the demonstration of anatomical formations on preparations; single error in the Latin terminology; answers to additional questions correct, clear enough.

"Satisfactory" - the story is not enough literate, part-time, with errors in the details; uncertainty in the demonstration of anatomical structures; errors in Latin terminology; answers to additional questions is not enough clear, with errors in particular.

"Disappointing" - the story of an illiterate, incomplete, with gross errors; errors in the demonstration of anatomical structures; ignorance of the Latin terminology; answers to additional questions wrong.

Sample Course Paper Topics

Essays

1. Anthropometry: main indicators and their practical use.
2. Biomechanics of the muscles.
3. Biomechanics of the joints.
4. Age and individual specifics of bones
5. Age-related changes in the joints.
6. Age-related changes in the skull.
7. Individual variability of the skull.
8. Ethnic differences of skulls.

9. Ethnic differences of the skeleton.
10. Bone development.
11. The development of the muscles.
12. Joints development.
13. The development of the skull.

Aids

1. The spine on the rod with a model of the intervertebral discs.
2. The ribs with the sternum.
3. Skeleton of the upper limb (clavicle, scapula, humerus, radius and ulna).
4. Hand skeleton
5. The skeleton of the pelvis (with the sacrum and coccyx).
6. The skeleton of the lower limb (femur, tibia, fibula, patella).
7. The skeleton of the foot.
8. Occipital joint with ligaments.
9. Connections between the thoracic vertebrae and the ribs
10. The compounds of the sternum and the ribs with the clavicle.
11. The shoulder joint.
12. The elbow joint.
13. Joints of the forearm and hand.
14. Joints of the pelvis.
15. The hip joint.
16. The knee joint.
17. Joints of the leg and foot.
18. Specimen of the skull with the lower jaw.

Research works

1. Osteometric research of the vertebrae.
2. Osteometric research of the upper limb.
3. Osteometric research of the lower limb
4. Osteometric research of the pelvic bones.
5. Craniometry.

7. Information materials for the discipline

a) Basic reading

1. Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010. – Volume 1.
2. Sapin M.R., Kolesnikov L.L., Nikityuk D.B. Textbook of human anatomy: For medical students: in 2 volumes. - M.: Moscow New Wave Publishing Agency, 2010. – Volume 2.

b) Supplementary reading

1. Kalmin O.V., Kalmina O.A., Galkina T.N., Burko P.A. Myology: Tutorial. – Penza: PSU Publishing, 2014.
http://elib.pnzgu.ru/library/16031200
2. Kalmina O.A., Kalmin O.V. Lectures on Human Anatomy. Part 1: Tutorial. – Penza: PSU Publishing, 2014.
http://elib.pnzgu.ru/library/15284000

3. Kalmina O.A., Kalmin O.V. Lectures on Human Anatomy. Part 2: Tutorial. – Penza: PSU Publishing, 2014.
http://elib.pnzgu.ru/library/15321400
4. Kalmina O.A., Kalmin O.V. Lectures on human anatomy. Part 3: Tutorial. – Penza: PSU Publishing, 2016. – 134 c.
http://elib.pnzgu.ru/library/15345000
5. Kalmin O. V., Bochkareva I. V., Burko P. A. Splanchnology: Tutorial. – Penza: PSU Publishing, 2015.
http://elib.pnzgu.ru/library/15593800
6. Kalmin O V., Kalmina O. A., Galkina T. N., Bochkareva I. V., Nikishin D. V., Burko P. A. Arthrology: Tutorial. – Penza: PSU Publishing, 2015.
http://elib.pnzgu.ru/library/15511200
7. Zenin O.K., Kalmina O.A., Usovich A.K., Pikaluk V.S. Anatomical glossary (locomotor apparatus, splanchnology): Tutorial. - Penza: PSU Publishing, 2016.
http://elib.pnzgu.ru/library/19210500
8. Zenin O.K., Kalmina O.A., Ognerubov N.A. Anatomical glossary (central nervous system, angioneurology): Tutorial. – Penza: PSU Publishing, 2016.
http://elib.pnzgu.ru/library/23584600
9. Kalmin O.V., Kalmina O.A., Burko P.A. Anatomy of the central nervous system: Tutorial. – Penza: PSU Publishing, 2016.
http://elib.pnzgu.ru/library/15560500

c) Software and Internet resources

1. MIT OpenCourseWare. Free Online Course Materials - http://ocw.mit.edu/index.htm
2. Free video lectures, Free Animations, Free Lecture Notes, Free Online Tests, Free Lecture Presentations - http://www.learnerstv.com/index.php
3. The Visible Human Project - Images & Animations - http://www.nlm.nih.gov/research/visible/animations.html
4. Microsoft Windows (DreamSpark/Microsoft Imagine Standart); reg. number 00037FFE-BACF8FD7, contract № СД-130712001 of 12.07.2013.
5. Kaspersky Anti-Virus 2016-2017, reg. number KL4863RAUFQ, contract № ХП-567116 of 29.08.2016.
6. Open source software: LibreOffice; Google Chrome; Adobe Reader; 7zip.

8. Equipment

№	Name of special classroom and classroom for independent work	Equipment of special classroom and classroom for independent work
1.	Classroom 10-010, housing 10, 27 m^2	Anatomical table - 1 pc. School table - 6 pcs. Cupboard for aids - 3 pcs. Blackboard- 1 pc. Stool - 20 pcs. X-ray view box – 1 pc. Anatomical aids. Anatomical dummies. Visual aids. Anatomical tables.
2.	Classroom 10-009, housing 10, 28.5 m^2	Multimedia projector – 1 pc. Laptop – 1 pc. Anatomical table - 1 pc. School table - 2 pcs. Cupboard for aids – 3 pcs. Screen – 1 pc. Stool – 30 pcs. Anatomical aids. Anatomical dummies. Visual aids. Anatomical tables.
3.	Classroom 10-013, housing 10, 36.6 m^2	Multimedia projector – 1 pc. Laptop – 1 pc. Anatomical table - 1 pc. School table – 4 pcs. Cupboard for aids – 4 pcs. Screen – 1 pc. Blackboard – 1 pc. X-ray view box – 1 pc. Stool – 30 pcs. Anatomical aids. Anatomical dummies. Visual aids. Anatomical tables
4.	Classroom 10-014, housing 10, 39 m^2	Multimedia projector – 1 pc. Laptop – 1 pc. Anatomical table – 1 pc. School table – 4 pcs. Cupboard for aids – 4 pcs. Screen – 1 pc. X-ray view box – 1 pc. Blackboard – 1 pc. Stool – 30 pcs. Anatomical aids. Anatomical dummies. Visual aids. Anatomical tables

The study program for the discipline "Human anatomy" is drawn in accordance with the federal state educational standard of higher education and academic plan for the course 31.05.01 – General Medicine.

The program developers:

Head of the Department of Human Anatomy _____ O.V. Kalmin

The program was discussed and agreed at the department meeting

Records № 7 on " 04 " March 2016.

Head of the Department of Human Anatomy _____ O.V. Kalmin

The program is agreed with the Dean of the Medical Faculty of PSU

Dean of the Medical Faculty _____ I.Ya. Moiseeva

The program was approved by methodological commission of the Medical Institute

Records № 7 on " 05 " March 2016.

Chair of the methodological commission _____ O.V. Kalmin

Annual list of registration for changes and amendments to the present program

Academic year	Department review (records №, date, head of the department signature)	Changes and amendments	Pages		
			changed	added	deleted
2016-2017 уч. год	Протокол № 1 от 31.08.2016	Переутверждена без изменений на новый учебный год			
2016-2017 уч. год	Протокол № 9 от 18.05 2017	Изменена квалификация выпускников	1		
2017-2018 уч. год	Протокол № 1 от 30.08.2017	Добавлено в п.5 описание применения образовательных технологий к обучающимся с ограниченными возможностями здоровья и инвалидам	21-22		
2017-2018 уч. год	Протокол № 1 от 30.08.2017	Переутверждена на новый учебный год			
2018-2019 уч. год	Протокол № 1 от 01.09.2018	Переутверждена на новый учебный год без изменений			
2019-2020 уч. год	Протокол № 1 от 31.08.2019	Переутверждена на новый учебный год без изменений			