

Danylo Halytsky Lviv National Medical University

Department of Normal Anatomy

APPROVED
First Pro-rector for scientific
and pedagogical work
Assoc. Prof. I.I. Solonyenko

“ ” 2023

WORK ACADEMIC PROGRAMME

Course
General Anatomy
OK-11
for the training of specialists of the 2nd' Master of Medicine level
of high education
education sector 22 "Public Health"
specialty 221 "Dentistry"

Approved
at the methodic departmental
meeting
June 12, 2023
(minutes № 12)
Head of Department
Prof. L.R. Mateshuk-Vatseba

Approved
at cycle methodic committee on
biomedical courses
June 22, 2023
(minutes № 4)
Head of Committe
Prof. O.D. Lutsyk

Lviv, 2023

Working curriculum on the discipline "Human Anatomy" for Faculty of Dentistry first-year students, studying in the specialty 221 "Dentistry"

Composed of:

L.R. Mateshuk-Vatseba, DoS, professor, Head of the Normal Anatomy department Danylo Halytsky Lviv National Medical University; M.V. Podolyuk, PhDR.J. Borys, PhD, associate professor and basis of the program of the discipline "Human Anatomy" and the curriculum approved by cycle methodic committee on June 10, 2022 (minutes No.12)

Changes and additions to the curriculum for the academic year 2022-2023

№	Changes (additions)	Date and minutes № of the department meeting	Notes
1	12 credits (practical classes - 160 hours; students self-work - 180 hours)	June 10, 2022, minutes No.12	
2	Combining practical topics № 11, № 18, № 22, № 28	June 10, 2022, minutes No.13	
3	Supplementing the topic of the lecture № 10	June 10, 2022, minutes No.12	
4	Supplementing for topic of practical classes № 1, № 19, 25, № 28, № 35, № 55	June 10, 2022, minutes No.12	

Head of Department _____

Prof. L.R. Mateshuk-Vatseba

Introduction

The working program in the discipline "Human Anatomy" for students of I course of the dentistry faculty in the specialty 221 "Dentistry" is based on the Educational-professional program "Dentistry" of the second (major) level of higher education in specialty 221 "Dentistry", area 22 Healthcare, approved by the Academic Council of Danylo Halytsky Lviv National Medical University on February 23, 2022, protocol № 1-VR, and Regulations about organization of the educational process at Danylo Halytsky Lviv National Medical University, approved by the Academic Council and Rector of the University on June 23, 2021, order № 2020-z. The purpose of the Regulation is to standardize the content, scope, sequence and organizational forms of study of the discipline by students, as well as forms and means of current and final control of knowledge.

Occur in 1-st and 2-nd semester, according to the educational plan of normal anatomy studying.

Human anatomy, like educational discipline:

Based on studying by the student's medical biology, histology, cytology, embryology, biophysics, Latin and integrated with this subject;

Lays the foundation for studying by the student's normal physiology, clinical disciplines and formation of the skills to use the normal anatomy knowledges in a future during the studying later disciplines and in future profession.

Organization of the studying process based on credit and module system due to demands of the Boulogne process.

Curriculum has the module structure and includes the blocks of summary modules. The volume of studying advantages of the students described in ECTS credits, which credited to the students after each module.

Anatomy course include summary modules:

Locomotor apparatus. Splanchnology. Central and peripheral nervous system. Cardiovascular system.

There were next types of educational sessions:

Lectures.

Practice.

Self-work.

The lectures topics based on relevant sections of anatomy course. Practice includes:

- To mastery of the structure of the organs, system of human organs.
- To determine on the preparations topography and anatomy relationships of the organs and the systems.
- To mastery of the Latin terminology, accordingly to international anatomical nomenclature demands (San-Paulo, 1997)
- To estimate the aged, sex and individual features of the human organ's structures.
- The assimilation of the themes controlled during the practices according to purposes of the practice.

It is recommended to use next resources to established the level of knowledge of the students: PC tests, situational tasks, control with preparations, analyze and estimation sex, aged and individual features of the organ's structure, analyze of the topographic and anatomical relationship of the organs and the systems of the human; analyze of the patterns of prenatal and early postnatal development of the organs, variants of the organs, mutations.

Control of the assimilation of the modules takes place after each module. The student marks are rating and make according to multilevel scale and is mean of assimilation of appropriate modules, according to ECTS system and scale, which approved in Ukraine.

Structure and content of the curriculum

Components of the curriculum.

Content sections of the curriculum.

Description of the discipline.

Description of curriculum of the subject "Human Anatomy" for students of Faculty of Dentistry

Structure of the discipline	The number of hours, including			Year of study	Type of control	
	Total	Audience				SW S
		Lectures	Practice			
Module: Human anatomy Summary modules 10	12,0 credits ECTS/ 360 hours	20	160	180	I course (I,II semester)	test, exam
by semesters						
Summary modules 1- 5	5 credits ECTS/ 154 hours	10	56	88	I semester	test
Summary modules 6 - 10	7 credits ECTS/ 206 hours	10	104	92	II semester	exam

Total:

12 credits

ECTS 360 hours

1. Aim of study of educational discipline

The aim of the discipline "Human anatomy" follows the objectives of education and professional training program for graduate medical educational establishment and determined the content of the system of knowledge and skills which should have medical specialist.

Tasks of the discipline are formulated in accordance with the program of educational and professional program (PEP) and professional qualification characteristic:

- Analyze information about the structure of human body system, it consists of, organs and tissues;
- Identify topographic anatomical relationships of organs and human systems;
- Interpret the patterns of prenatal and early postnatal development of the human versions of variability, malformations;
- Interpret the sexual, age-old and individual features of structure of organism of the human;
- Provide unity and interdependence of structures and functions of human variability under the influence of environmental factors;
- Determine the impact of social conditions and work on the development and structure of the human body;
- Demonstrate possessing mental and ethical principles of attitude toward a living human and his body as an object anatomic and clinical research.

1.1.A result of study anatomy student should know:

- essence, the fundamental structural properties of the structure of the human body
- periods of development in pre- and postnatal periods of the human organism
- embryology development during the prenatal period

- development of the organs from germ layers
- concept of norms options anomalies
- the concept of the individual variability
- the concept of the constitution of the body
- types of body structure
- the main periods of human ontogenesis
- phases in the prenatal period
- development of the human embryo in 5 stages
- importance of the placenta
- tissue classification
- research methods in anatomy
- regularity anatomical structure of systems and apparatuses
- regularity of heart disease
- regularities of pathological conditions in violation of the functions of organs - variability of the organs under the influence of environmental factors.

1.2.Be able to:

- solve situational tasks of the main sections of discipline
- differentiated tissue components
- be able to place the bones in relation to itself
- determine anatomical formations on the bones of the human skeleton
- analyze the structure of the human skeleton
- analyze bone structure continuous connections
- define the types of structure of discontinuous connections of bones
- be able to determine main and accessory elements of the joint
- determine the structure of the viscera of the digestive system, their function
- determine the structure of the respiratory system, their topography
- determine the structure and function of the urinary system analyze the structure, topography and function of the endocrine and immune systems
- show on moist preparations structure of the spinal cord
- identify the main anatomical formations of the brain
- identify the main structure of the sense organs
- show on preparations from the brain out of the skull and cranial nerves
- determine branching cranial nerve innervation area
- demonstrate the topography and branching vessels of the head and neck
- determine the branching of branches of the thoracic, abdominal aorta - be able to recognize on moist preparations branches of peripheral nerves and arterial of branches
- analyze features of topography and merger of the veins
- determine location of the formation of caval veins
- determine anatomical areas confluence of lymphatic ducts in venous angles
- show on moist preparations lymphatic nodes of the human body
- analyze the formation and clinical significance of venous anastomoses
- determine autonomous nerve plexus of the abdominal cavity
- analyze the features of somatic and autonomic innervation of organs
- topography differentiate branches of the peripheral nerves and blood vessels of the body
- be able to determine the topographical formations in body cavities containing blood vessels and nerves
- predict the impact of environmental factors on the human body.

1.3. Master the skills:

- location skeletal bones in relation to itself
- determining the lines on the surface of the chest
- location of the anatomic structures of the skull bones, the trunk and extremities
- determination of the main elements of the joint

- determination of the accessory elements of the joint
- techniques of the preparation of the muscles making temporary micropreparations
- techniques of the preparation of the viscera of the cavities
- techniques of the preparation of the of blood vessels
- techniques of the preparation of the components of lymphatic vessels
- techniques of the preparation of peripheral nerves
- determining the structures of central nervous system.

2. Content of the program

Summary module 1. Introduction to anatomy. Skeleton bone anatomy.

- Specific objectives: - - - -
- Identify the subject and objectives of anatomy, basic anatomical methods;
- Evaluate the main directions of development of modern anatomy;
- Analyze the stages of human anatomy as a fundamental discipline;
- Analyze the contribution of prominent scientists and anatomists Ukraine and Kyiv in the Ukrainian establishment of the school of anatomists and in particular Kyiv anatomical school;
- Apply anatomical plane and axis for explain the topography of bones and their parts;
- Apply anatomical terminology to describe bones, explaining their topography;
- Identify and analyze a concept "bone as an organ";
- Analyze the mechanisms of development of bones in embryogenesis;
- Apply classification of the bones for the analysis of the structure of the bones of the skeleton;
- Describe and show the structure of the bones of the trunk, skull and limbs.

Theme 1. Object and tasks of anatomy. Research methods are in an anatomy. Basic modern directions of development of anatomy. Development of Ukrainian anatomic schools. Kyiv anatomic school. Lviv anatomic school. Anatomic nomenclature. Axes and planes of body. Bone as organ. Classification of bones. Development of bones is in embryo. Anatomy of the bones of the trunk.

Human Anatomy - the science of form and structure, origin and development of the human body, its organs and systems. Anatomy provides a systematic description of the shape, structure, condition and topographical relationship of body parts and taking into account their age, sex and individual characteristic.

Basic modern directions of development of anatomy are an age-old anatomy, comparative anatomy, plastic anatomy, anthropology, ecological anatomy and other.

Basic research methods in anatomy - a visual study, anthropometric research, preparation, macro-microscopic studies, microscopic studies. Modern methods of research in anatomy: renthenanatomic methods, computed tomography, magnetic resonance imaging (MRI), ultrasound (sonography), endoscopy, etc.

Formation and development of Ukrainian anatomical schools.

Formation and development of Kyiv anatomical school. Contribution MI Kozlov, O.P.Valtera, V.O.Betsa, M.A.Tyhomyrova, F.A.Stefanisa, M.S.Spirova, I.I.Bobryka the development of the Kiev school of anatomical and importance of their work for the modern anatomy.

Formation and development of Lviv anatomical school. A. Contribution of Marghera, P. Krauznekera, J. Berresa, H. Kadi, J.-A. Markowski, T. Martsinyaka, A.P. Lyubomudrova, V.F. Alder, L.M. Lychkovskoho, M.A. Netlyuha in Lviv anatomical development of the school and the value of their work for the modern anatomy.

A concept is about the International anatomic nomenclature. Its value is for the study of anatomy and unitization of study of natural and clinical disciplines. Basic anatomic terms that expose the topography of anatomic objects, and the basic descriptions.

Anatomic planes (sagittal, frontal, horizontal) and axis (frontal, vertical, sagittal) their description, use for description of the bones and their parts.

General information about the skeleton. Bone development (ontogeny). Primary and secondary bone. Classification of bones. Bone as an organ. Compact and spongy bone material, its structure. Chemical composition, physical and mechanical properties of bone. The structure of a tubular bone: part of it. Features of the structure of bone in children, youth, mature, elderly and senile age. Bone X-ray image. The impact of social and environmental factors on the development and structure of the bones of the skeleton.

The bones of the skeleton: vertebrae, ribs, sternum. Segment principle in the structure of the axial skeleton.

General characteristics of the spinal column. General plan of the vertebrae. Features of the structure the cervical, thoracic, lumbar vertebrae, sacrum, coccyx bone. Age-old and sexual features of structure of vertebrae. Influence of social and ecological factors on the structure of vertebrae. Defects of development of vertebrae.

Classification of ribs. Structure of ribs and sternum. Age-old and sexual features of structure of sternum. Influence of social and ecological factors on the structure of ribs and of sternum.

Theme 2. Anatomy of the bones of the neurocranium.

Frontal, occipital, parietal, ethmoid bones. Development of the bones of the neurocranium in ontogenesis Structure of the bones that form a neurocranium.

Location, main parts, anatomical formations, their practical importance, the relation to the base of the skull, lateral and facial norms skull.

Theme 3. Anatomy of the bones of the neurocranium. Canals of the temporal bone.

Sphenoid, temporal bones. Canals of the temporal bone. Structure of the bones that form a neurocranium. Location, main parts, anatomical formations, their practical importance, the relation to the base of the skull, lateral and facial norms skull. Practical importance of the canals of the temporal and sphenoid bones.

Theme 4. Anatomy of the bones of the viscerocranium. Facial norm.

Structure of bones that form a viscerocranium: mandible, maxilla, zygomatic, nasal, palatine, lacrimal, hyoid bone, vomer, lower nasal concha. Features of the structure and location of the bone. The formation of the walls of the orbit and bone nasal cavity, their connections with indentations on the skull.

Theme 5. Anatomy of the skull. Temporal, infratemporal, pterygopalatine fossa.

Development of skull in ontogenesis. Cerebral and facial skull. Vaults of skull, external and internal bases of the skull. Front, middle and back cranial fossa, orbit, bone nasal cavity, temporal, infratemporal, pterygo-palatine fossa. Age-old and sexual features of the structure of the skull. Variants and anomalies of development of the bones of the skull. X-ray of the skull.

Theme 6. Anatomy of the bones of the upper limbs.

Upper limb: its divisions. The bones of the upper limb: departments. Upper extremity: clavicle, scapula; their structure. The free part of the upper limb: humerus, forearm and hand, their structure. Development of bones of the upper limb in ontogenesis. Variations and anomalies of the bones of the upper limb.

Theme 7. Anatomy of the bones of the lower limbs.

Lower limb: its divisions. The bones of the lower extremity: departments. The belt of the lower extremity: hip bone; its structure. Parts of the hip bones, their structure. Free of lower limb: femur, tibia bone, feet; their structure. Development bones of the lower limb in ontogenesis. Variations and abnormalities of the bones of the lower limbs.

Age-old, sexual features of structure of the bones of the limbs. Specific structural features of the bones of the upper and lower limbs due to the anthropogenesis. The impact of sport, work, social factors and environmental factors on the structure of the bones of the upper and lower limbs.

Theme 8. Practical skills from anatomy of the bones of the skeleton.

Summary module 2. Connection of skeletal bones.

Specific objectives:

- Determine and analyze the types of connections between bones;
- Describe and show connection between the bones of the trunk;

- Describe and show connection between the bones of the skull;
- Describe and show connection between the bones of upper limbs;
- Describe and show connection between the bones of the lower limbs;

Theme 9. Anatomy of continuous and discontinuous joints between bones. The development of connections between the bones in ontogenesis.

Connection is between the bones of the trunk and bones of the skull. Classification of joints between bones. Types of synarthroses: fibrous compounds (syndesmosis) - membranes, ligaments, sutures, fontanelles; cartilaginous connection (synchondros) - permanent, temporary, hyaline, fibrous symphysis Diarthrosis (synovial connection joints): definition, basic features of the joint, their characteristics. Additional components of the joints. Classification of joints in structure, form the articular surface's function. Simple, compound, complex and composite joints: their characteristics. Types of movements and their analysis (axis movements plane movements). Uniaxial, biaxial and multi-joints, types, characteristic movements in each type of joint.

Classification of joints of the spinal column. Syndesmosis spine: their characteristics and structure. Synchondrosis spine: their characteristics and structure. The joints of the vertebral column: median atlanto-axial joint, lateral atlanto-axial joint, bicondylaris joints, lumbosacral joint, sacrococcygeal joint: their structure. Vertebral column as a whole. Age, gender-spine as a whole. The impact of sport, work, social factors and environmental factors on the spine as a whole.

Connection of the thorax: syndesmosis, synchondrosis and joints (costovertebral-joints, costal-transversal joints, sterno-costal joints) their description and structure. Thorax on the whole, its structure. Influence of sport, labour, social factors and ecological factors on the structure of thorax on the whole. Connection of the skull: classification. Syndesmosis of the skull. sutures, their types and characteristics. Synchondrosis of the skull: types, characteristics, age features. The joints of the skull: the temporo-mandibular joint and the atlantooccipital joint: their structure X-ray anatomy of the temporomandibular joint. Age features of the skull connection: fontanel, their types, structure, terms ossification.

Theme 10. The connection between the bones of the upper limbs.

The connection of the upper limb. Connecting pectoral girdle: syndesmosis of the girdle upper limb and upper limb (acromio-clavicular joint and sternoclavicular joint), their structure. Connection free upper extremity: shoulder joint, elbow, forearm connection, wrist joint, joints of the hand.

Theme 11. The connection between the bones of the lower limbs. Practical skills from anatomy of the bones and its connection.

Connection of the lower limb. Connection of pelvic belt: syndesmosis, pubic symphysis, sacro-iliac joint. Pelvis on the whole: its structure, basic sizes. Age-old, sexual, individual features of the pelvic. Connection of free lower limb: hip joint, knee-joint, connection of bones of shin, ankle joint, joints of foot. Vault of foot.

X-ray anatomy bone joints of the upper and lower limbs. The impact of sport, work, social factors and environmental factors on the structure of compounds bones of the upper and lower limbs.

Summary module 3. Muscular system.

Specific objectives:

- Determine and analyse a concept "muscle as an organ";
- Analyze classification of the skeletal muscles on a topography, development, structure, by a form and other;
- Analyze development of the skeletal muscles in ontogenesis;
- Describe and show muscles and fascia of the trunk;
- Describe and show muscles and fascia of the head and neck; ;
- Describe and show muscles and fascia of the head;
- Describe and show muscles and fascia of the neck;
- Describe and show muscles and fascia of the upper limbs; - Describe and show muscles and fascia of the lower limbs.

Theme 12. Muscle as an organ. Classification of the muscles. Development of the skeletal muscles. Muscles and fascia of the back.

Muscle as an organ - definition. Tendon, aponeurosis. Aids muscle: fascia, synovial sheath, synovial bags, sesamoid bone, tendon arc, muscular block.

Anatomic and physiology diameters of muscles: master data about force and work of muscles; a concept is about levers. Beginning and attachment of muscles: their functional description.

Classification of the muscles: the development, topography, form, sizes, direction of muscular fibres, by a function and other

Development of the muscles in ontogenesis. Sources of development of the muscles of the trunk, head, neck, upper and lower limbs.

Theme 13. Anatomy of the muscles and fascia of the thorax and abdomen.

Classification of the muscles of the trunk by a topography, development and form. Segment structure of the muscles of the trunk.

Muscles of the back: superficial and deep, their description. Thoracolumbar fascia.

Muscles of the thorax: superficial and deep, their description. Pectoral fascia endothoracic fascia.

Abdominal muscles: muscles of the anterior, lateral and posterior walls of the abdomen, their characteristics. Fascia abdomen. White line. Umbilical ring. Abdominal inguinal canal. Vagina recti. Diaphragm - definition. Parts of diaphragm apertures, their contents, and triangles.

Theme 14. Anatomy of the muscles and fascia of the head

Muscles of the head: classification. Masticatory muscles and their characteristics. Muscles of the face, they are unlike other skeletal muscles. Classification of the muscles of the face, their characteristics. Fascia of the head.

Theme 15. Anatomy of the muscles and fascia of the neck. Topography of neck.

Muscles of the neck: classification. Superficial, middle and deep muscles of the neck, their description. Fascia of the neck: anatomic classification and anatomical and topographical classification. Topography neck: areas, triangles, spaces.

Theme 16. Anatomy of the muscles of the upper limbs.

Muscles of the upper limb: classification. Muscles of the upper limb girdle, their characteristics.

Muscles of the shoulder: classification, their characteristics. Forearm muscles: classification, their characteristics. Hand muscles: classification and their characteristics.

Theme 17. Anatomy of the muscles of the lower limbs.

Muscles of the lower limb: classification. Muscles of belt of the lower limb: classification, their description. Muscles of the thigh: classification, their description. Muscles of the shin: classification, their description. Muscles of the foot: classification, their description.

Theme 18. Topography and fascia of the upper and lower limbs. Practical skills from myology.

Fascia of the upper limb. Axillary fossa, axillary cavity, its topography, triangles, quadrilateral and trilateral holes. Brachiocephalic muscular canal. Bonefibrous channels, extensor retinaculum, flexor retinaculum. Carpal tunnel, synovial sheath tendon flexor muscles. Synovial bursas.

Fascia of the lower limb. Muscular and vascular space, their topography and content. Femoral triangle. The grooves on the front of the thigh. The adductor channel. Popliteal fossa. Channels of the tibia: cruropliteal channel and the superior and inferior musculoperoneus channels. Grooves of the sole of the foot.

Superior and inferioretensor retinaculum, superior and inferior fibular retinaculum, flexor retinaculum. Synovial sheath synovial bursas and muscles of the lower limbs. Mechanisms that support the arch of the foot: tightening the foot, passive (links) and active (muscle).

Age-old, sexual and individual features of the skeletal muscles. Influence of the sport, labour, social factors and ecological factors on the structure of the skeletal muscles, trunk and limbs.

Summary module 4. Splanchnology. Anatomy of the digestive system.

Specific objectives:

- To analyze the classification of internal organs
- Determine the overall body plan of tubular organs and organ-evaluate structural features inherent tubular body due to its function
- Determine the overall body plan of the uterine parenchyma
- Analyze the development of the oral cavity and its derivatives in embryogenesis

- Analyze the development of the digestive system in embryogenesis
- Analyze anomalies and variants of the digestive system
- Describe and demonstrate the structure of the oral cavity and its derivatives
- Describe and demonstrate the structure of the digestive system
- To analyze the development of the respiratory system in embryogenesis
- Analyze anomalies and variations of the respiratory system
- Describe and demonstrate the structure of the respiratory system
- To analyze the development of the urinary system in embryogenesis
- Analyze anomalies and variations of the urinary system
- Describe and demonstrate the structure of the urinary system
- Analyze the development of the female reproductive system in embryogenesis
- Analyze anomalies and variations of the female reproductive system
- Analyze the development of the male reproductive system in embryogenesis
- Analyze anomalies and variants of development of the male reproductive system
- Describe and demonstrate on preparations structure of internal and external female genitalia
- Describe and demonstrate on preparations structure of internal and external male genitalia.
- Identify common patterns of structure and function of the central organs of the immune system (lymph or primary lymphoid organs)
- Describe and demonstrate the structure of the immune system
- Identify common the structure and functions of the endocrine system
- Describe and demonstrate the structure of the endocrine system

Theme 19: Introduction to splanchnology. Classification of internal organs. General laws of the structure of the tubular organs. General laws of the structure of the parenchymal organs. General of the structure of the classification of internal organs and parenchymal elements. Anatomy of the oral cavity and its derivatives.

Classification of internal organs: tubular and parenchymal organs. Overall body plan of the tubular wall: mucosa, muscular layer, the outer shell. Characteristics of each shell. Organ structural features of the mucous membranes, depending on the function of the organ. Serous membrane: relation of variants to the peritoneum.

General of the structure of parenchymal organs. Glands: their general principles of the structure, functions.

Digestive system: organs function. The development of the oral cavity and its derivatives. Development of the gastrointestinal tract. Development of liver and pancreatic glands. Primary and secondary body cavity. Sources of serous membranes. Development of the peritoneum. Structural mechanisms of defects of the mouth and its derivatives. Anomalies and variants of development of the gastrointestinal tract liver and pancreas.

Oral cavity: part of it. The walls of the oral vestibule and oral cavity proper, their combination.

Theme 20. Anatomy of the teeth.

Teeth. Parts of the tooth. Surface of the crown. General structure of the teeth. Periodontal periodontium. Clear. Permanent teeth: their formula, description of each tooth. Anatomical features of permanent teeth. Terms of eruption of permanent teeth. Deciduous teeth: formula, structural features, terms eruption. Xray anatomy of the teeth. Bite. Development of teeth. Anomalies and variants of teeth. Palate: hard palate. soft palate, their structure. Tonsils. Tongue: parts.

Features of the structure of the mucous membrane of the tongue muscles. Glands of oral cavity classification, their development. Small salivary glands: classification, topography. structure. Large salivary glands: topography, characteristics, structure, classification.

Theme 21. Anatomy of the pharynx, esophagus, stomach. Anatomy of the intestine, pancreas. Areas anterior abdominal wall.

Pharynx. its topography, parts, connections. Faucet. Lymphatic (lymphoid) ring of the pharynx. The structure of the pharyngeal wall: mucosa, pharyngeal fascia main muscles of the pharynx, the outer shell. Esophagus: topography, parts, structure wall. Narrowing of the esophagus. X-ray anatomy of the esophagus.

Stomach: topography, part of the stomach. The structure of the stomach wall: structural features of the mucosa (relief, glands), muscles membranes and serous membranes. X-ray and hastroscopic characteristic mucosal. Ligaments of stomach. Variations form the stomach: anatomical (on the body) and radiographic (a living person). The shape of the stomach, depending on the type of body structure. Age features of the topography and structure of the stomach.

Small intestine, its departments. Duodenum: parts, topography, variations of form and position. X-ray anatomy twelve duodenum. Topography mesenteric small intestine: empty and ileum. The structure of the wall of the small intestine. The structure of the mucosa: intestinal villi, glands, wrinkles, lymphatic (limfoïd) noduls. Features of the structure of the mucous membrane of the small intestine in its various departments. The structure of the muscle layer. Normal peritoneum each section of the small intestine. Age-related structural features small intestine.

Large intestine: departments. The structure of the wall of the large intestine: mucosa (glands, folds, lymphatic (lymphoid) nodules), muscle membrane, serous membrane. Normal peritoneum each colon. The cecum and appendix: topography. structural features. Variants position of the appendix and its projection on the anterior abdominal wall. Colon: parts, bends, their topography, structural features of the mucosa and muscle layer. Normal peritoneum. Rectum: parts, folds, topography. Features topography rectum, depending on gender. Features of the structure of the mucosa and muscle layer. Normal peritoneum. Anal canal: topography, structural features of the mucosa and muscle membranes.

Musclelatches anus. Macroscopic cancellation structure small and large intestine. Agerelated i structural features of the colon. X-ray anatomy of the colon. The shape and position of the colon in a living person.

Pancreas: parts, topography, structure, functions. Pancreatic ducts. Pancreatic islands. Age features of the topography and structure of the pancreas.

Theme 22: Anatomy of the liver, gall bladder. Anatomy of the peritoneum.

Liver. Topography. External structure: edges, surfaces and their relief. Connections liver. Normal peritoneum. The internal structure of the liver: share, segments.

The vessels of the liver. Liver function. Ways secretion of bile. Gallbladder: topography, parts, structure wall function. The common bile duct: formation, topography. Age features of the topography and structure of the liver.

Age-related structural features of the gall bladder.

Peritoneum. Abdominal its contents. Peritoneal cavity and its contents. Parietal peritoneum, visceral peritoneum: their characteristics. Options related internal organs to the peritoneum. Derivative peritoneum: ripple, gaskets, ties, their structure and function. Derivative peritoneal cavity: bursa (liver, pregastric, omental, their walls, connections), sinuses, channels, corners, fosses, recesses. Topography of the peritoneum in the pelvic cavity: sexual characteristics.

Topography parietal peritoneum on the anterior, posterior wall of the abdominal cavity.

Summary module 5. Respiratory, immune and endocrine systems. Urogenital apparatus.

Specific objectives:

- To analyze the development of the respiratory system in embryogenesis
- Analyze anomalies and variations of the respiratory system
- Describe and demonstrate the structure of the respiratory system
- To analyze the development of the urinary system in embryogenesis
- Analyze anomalies and variations of the urinary system
- Describe and demonstrate the structure of the urinary system
- Analyze the development of the female reproductive system in embryogenesis
- Analyze anomalies and variations of the female reproductive system
- Analyze the development of the male reproductive system in embryogenesis
- Analyze anomalies and variants of development of the male reproductive system
- Describe and demonstrate on preparations structure of internal and external female genitalia
- Describe and demonstrate on preparations structure of internal and external male genitalia.

- Identify common patterns of structure and function of the central organs of the immune system (lymph or primary lymphoid organs)
- Describe and demonstrate the structure of the immune system
- Identify common the structure and functions of the endocrine system
- Describe and demonstrate the structure of the endocrine system

Theme 23. General anatomy of the respiratory system. Embryogenesis of the respiratory system. Anatomy of the respiratory system.

Respiratory system: organs, functions. The upper and lower tracts. Development of respiratory system in ontogenesis. Variants and anomalies of development of the respiratory system. External nose: parts, structure. Nasal cavity: vestibule, nasal meatuses, paranasal sinuses. Functional parts of the nasal cavity. The nasal part of the pharynx. Age features of the nasal cavity. Larynx. Topography. The structure of the larynx: cartilage, ligaments, joints and muscles. Elastic cone quadrangular membrane. The cavity of the larynx: parts, their limits. Vocal folds, creases vestibule. Glottis. Mechanisms of phonation. X-ray anatomy of the larynx, laringoskopea. Age features of the larynx.

Theme 24: Anatomy of the trachea, main bronchi, lungs. Pleura. Mediastinum.

Trachea: parts, topography, structure wall. The main bronchi: topography, structure wall. Bronchial tree. Age features of the trachea and main bronchi.

Lungs: topography, external structure. Gates lungs. The root of the lungs and its components. Lobes, segments, lobules of the lung. Acinus. The circulatory system of the lungs. X-ray anatomy of the trachea, bronchi, lungs. Age features of the lungs.

Pleura. Parietal pleura and its topographic parts. Visceral pleura. Pleural cavity: content, recesses, their functional significance. Projection pleural sacs on the walls thoracic cavity. Mediastinum: definition, limits. The organs of the anterior mediastinum. The organs of posterior mediastinum.

Theme 25: General anatomy of the urinary system. Embryogenesis of the urinary system. Anomalies and variants of the urinary system.

Urinary system: organs, function. Development of the urinary system in ontogenesis. Functions and anomalies of development of the urinary system: kidneys, ureters, bladder and urethra.

Kidney: topography of the right and left kidney. The outer structure of the kidney. Shell kidney. Fixing apparatus of the kidney. Topography elements renal legs. The internal structure of the kidney. Segments of the kidney. Nephron - structural and functional unit of the kidney. The structure of the circulatory system of the kidney. Urinary tract. Small renal calyx, major renal calyx, renal pelvis, structure wall function. X-ray anatomy; age characteristics of the topography and structure of the kidneys.

Ureter: parts, topography, structure of wall, functions. Narrowing of the ureter. Urinary bladder: form, external structure, parts. Features topography of male and female urinary bladder. The structure of the wall of the urinary bladder: structural features of the mucosa, muscle layer. Women's urethra. Male urethra. X-ray anatomy of the urinary tract (ureters urinary bladder, urethra). Age features of the bladder.

Theme 26: General anatomy of the male reproductive system. Embryogenesis of the male reproductive system. Variations and anomalies of development of the male reproductive system.

Male reproductive system: organs function. Classification of the male reproductive system. Internal male genitalia. External male genital organs. The development of the male reproductive system. Variations and anomalies of the internal male reproductive organs testicles, epididymis, seminal vesicles, prostate gland.

Variations and anomalies of the external male genitalia. Hermaphroditism.

Internal male genital organs. Testis: topography, structure. Epididymis. The process of lowering the testicles. Shell testis. Ejaculatory duct: parts, their topography, structure wall. Spermatic cord and its components. Seminal vessels: topography, structure, functions. Prostate: topography, parts, structure, functions. Seminal gland. Age features internal male genital organs. External male genital organs. Gates. The penis, its structure. Male urethra: parts, their topography, structure wall.

Theme 27: General anatomy of the female reproductive system. Embryogenesis of the female reproductive system. Variations and abnormalities of the female reproductive system

Female reproductive system: organs function. Classification of the female reproductive system. Internal female genitalia. External female genitalia. The development of the female reproductive. Variations and anomalies of the internal female reproductive organs: ovaries, fallopian tubes, uterus, vagina. Variations and anomalies of the external female genitalia.

Internal female genitalia. Ovary: topography, external structure, internal structure. Cyclic changes in the structure of the ovary. Age-related structural features of the ovary. Fallopian tube: topography, parts, structure walls, related to peritoneal function.

Uterus: topography, shape, parts, structure wall. Connections of the uterus, related to peritoneal function. Age-related structural features of uterine and options for its position. Vagina: vault, wall structure. X-ray anatomy of internal female genital organs

External female genitalia. Women pudendal area: pubic increase, large pudendal lips, small pudendal lips, vestibule of the vagina, vestibule bulb. Large vestibule glands. Small vestibule glands. Clitoris. Female urethra.

Perineum: definition topography. Urogenital diaphragm: limits, muscle fascia. Pelvic diaphragm: limits muscle, fascias.

Theme 28: General anatomy of the central and peripheral organs of the immune system. General anatomy endocrine system. Practical skills from respiratory, urogenital, immune and endocrine systems.

The immune system: functions. Classification of immune (lymphatic or lymphoid) system function. The central authorities of the immune system (primary lymphoid organs or lymph): bone marrow, thymus - structural patterns of their functions.

Peripheral organs of the immune system (lymph or secondary lymphoid organs): structural patterns of their functions. The development of the immune system in embryogenesis.

Central organs of the immune system (primary lymphoid organs). Red bone marrow. Yellow bone marrow. Topography, structure, functions. Age features of bone marrow. Thymus: topography, structure, functions. Age features of the thymus.

Peripheral organs of the immune system (lymph or secondary lymphoid organs). Spleen: topography, structure, functions. Lymphatic (lymphoid) ring throat: tonsils that his form. their topography, structure, functions. Lymph nodes: classification, structure, function. Lonely lymphatic (lymphoid) nodules: topography, structure, functions. Clusters of lymphatic (lymphoid) nodules: topography, structure, functions. Clusters of lymphatic (lymphoid) nodules of the appendix: topography, structure, functions. Age-related structural features of the peripheral immune system.

General principles of the structure of endocrine organs. Structural definition of "endocrine function." Structural mechanisms of hormone action implementation. Classification of endocrine organs. Development of endocrine organs in embryogenesis. Features functional activity of endocrine organs during the prenatal period of human ontogenesis. Variations and malformation of endocrine organs. Thyroid gland: topography, structure, functions. Parathyroid gland: topography. structure, functions. Adrenal gland: structure, functions. Topography of the right and left adrenal glands. The endocrine portion of the pancreas: structure, function. Pituitary gland: topography, parts, structure, functions. The pineal gland: topography, structure, functions.

Module 6. Anatomy of the CNS.

Specific objectives:

- Identify the general principles of structure and function of the central nervous system
- Analyze the development of the central nervous system in ontogenesis
- Analyze anomalies and variants of the spinal cord and brain
- Describe and demonstrate to external and internal structure of the spinal cord. - To analyze the classification of the brain for anatomical principles and development
- Describe and demonstrate to external and internal structure of division of the brain.

Theme 29: Introduction to the CNS. General principles of the structure of

reflex arcs. Grey matter of the CNS. The development of the central nervous system in ontogenesis. External and internal structure of the spinal cord

The leading role of the nervous system in the body: its importance for the integration of systems into a single piece of the body, to establish the relationship of the organism with the environment. Classification of the nervous system for topographic level (central nervous system and peripheral nervous system) and anatomical and functional level (somatic nervous system and autonomic nervous system). The general principle of the structure of the neuron. Morphological and functional classification of neurons. Receptors and their classification. General plan of synapses. Reflex arc. Gray matter of the CNS. Glia. Principles of spatial organization of the gray matter of the CNS. Ganglia. White matter of the CNS. The nerve fibers, nerve bundles, roots. The development of the nervous system in ontogenesis.

The development of the spinal cord in embryogenesis. Brain development in embryogenesis: stage three and five brain bubbles and their derivatives. Anomalies of the spinal cord. Abnormalities of the brain.

Topography of the spinal cord and its limits. The outer structure of the spinal cord (surface furrows cord, thickening). Segmental structure of the spinal cord. The relationship between the vertebrae and spinal cord segments (Shypo rule). The internal structure of the spinal cord: central canal, gray and white matter. The structure of the posterior, lateral and anterior horns of the spinal cord. White matter: classification. Composition of the anterior, lateral and posterior funiculus of the spinal cord. Own segmental apparatus of the spinal cord. The sensor node spinal nerve. Anterior and posterior roots. Formation of spinal nerve trunk.

Age-related structural features of the spinal cord.

Theme 30: Brain development in embryogenesis. Anatomy of derivative rhomboid brain and pons.

Brain. Parts of the brain: the great brain, cerebellum, brain stem. Classification of the brain developments. The original diamond-shaped brain: medulla oblongata hindbrain (cerebellum and cerebellum). Medulla oblongata: boundaries, external structure. Internal structure: gray and white matter. Bridge: external structure. Internal structure: gray and white matter.

Theme 31: Anatomy of the cerebellum. Fourth ventricle. Rhomboid fossa.

Cerebellum: topography, external structure. Internal structure: gray and white matter. Composition legs cerebellum. Rhomboid fossa: formation, borders, relief. Projection nuclei of cranial nerves on the surface of rhomboid fossa. Fourth ventricle: wall connection.

Theme 32: Anatomy of the midbrain and diencephalon.

Midbrain its parts. Roof plate: external structure; internal structure: gray and white matter. Brain stem, parts, internal structure: gray and white matter. Plumbing the brain.

Theme 33. Cortex of the brain. Olfactory brain. Lateral ventricles

Derivative forebrain: the diencephalon, the final brain.

Diencephalon: parts (dorsal - thalamic brain: the ventral part of the hypothalamus). Parts thalamic brain: the thalamus, epithalamus, metalamus.

Thalamus: external structure. Internal structure: nucleus and their functions. Epithalamus: parts. The pineal gland and its functions. Metalamus: parts and their functions. Hypothalamus: its components. Pituitary. The nuclei of the hypothalamus, their function. Hypothalamic-pituitary system. The third ventricle: walls, connections.

Theme 34. The telencephalon: cerebral hemisphere.

The telencephalon: cerebral hemisphere. Corpus callosum, fornix, anterior commissure. Olfactory brain: parts and their components. Basal nuclei: topography, parts, functions. Cortex of the brain. Works V.O.Byetsa. The relief of the cerebral hemispheres: sulcus and gyrus. Morphological basis of dynamic localization of functions in the cerebral cortex of the brain. White matter cortex: classification.

Theme 35. Basal nuclei: White matter of the hemispheres. Meninges spinal cord and brain. Formation and circulation of cerebrospinal fluid.

Associative fiber: classification, functions. Commissural fibers and their functions. Projection fibers: classification. Internal capsule: parts, topography pathways in each part. Lateral ventricles: parts, their topography, walls, connections.

Age-related features of the structure of the brain.

Meninges of the spinal cord. Intermeningeal spaces and their contents. Meninges of the brain. Peculiarities of dura mater of the brain. Processes dura mater of the brain, their topography. Sinuses dura mater of the brain. Intermeningeal spaces of the brain and their contents. Formation and circulation of cerebrospinal fluid.

Theme 36.: Ascending pathways of the central nervous system.

Definition of pathways. Anatomical and functional classification of pathways: central nervous system: associative pathways (short and long), commissural pathways, projection pathways (ascending and descending). Ascending (afferent) pathways: exteroceptive, proprioceptive. interoceptive.

Theme 37. Descending pathways of the central nervous system.

Descending (efferent) pathways: pyramidal, extrapyramidal, cortical-bridge. Pyramidal motor system (centers, pathways). Extrapyramidal system (centers, pathways).

Theme 38. Practical skills from anatomy CNS.

Summary module 7. Sense organs.

Specific objectives:

- Identify the general principles of structure and function of the senses
- Analyze the development of the senses and in ontogeny
- Analyze anomalies and variants of the senses
- Describe and demonstrate the structure of the eyeball and additional structures of the eye
- Describe and demonstrate the structure of the external ear, middle ear and inner ear.
- Eyeball. The coverings of the eyeball: fibrous, vascular, internal (retina), their structure. Chambers of the eyeball: anterior, posterior, their walls. Vitreous body, lens. Aqueous humor: place of formation, outflow paths
- Accommodation apparatus of the eye
- Ear. Development of the ear in ontogenesis. Anomalies of ear development. Parts of the ear: outer, middle and inner ear
- The mechanism of perception and ways of conducting of sound. Pathways of hearing and balance
- The sense of smell. Olfactory part of the nasal mucosa. Pathways of the olfactory analyzer
- The organ of taste. Taste papillae of the tongue, their topography. Pathways of the taste analyzer
- Skin: functions. Varieties of skin sensitivity. Breast (mammary) gland.

Theme 39. Anatomy sense organs. Eye and structure formation

Anatomical and functional characteristics of the sense organs. Peripheral receptors, leaders and cortical centers analyzers, their functional unity. Olfactory organ. Olfactory mucosa of the nose. Pathways olfactory analyzer. Organ of taste. Taste papillae of the tongue, their topography. Pathways taste analyzer. The total cover. Skin: function. Types of skin sensitivity. The breast mamma. Ontogenesis eye. Anomalies and variants of the eye. Topography, structure, functions. Eyeball. Shell eyeball: fibrous, vascular, inner (retina) - their structure. Eyeball cameras: front, rear, their walls. Vitreous body lens. Aqueous humor: a place of education, ways outflow Accommodation apparatus of the eye. Additional structures of the eye: eyelids, eyebrow, conjunctiva, external muscles of the eyeball, eye socket fascia. Lacrimal apparatus and its components. Pathways visual analyzer. Pupillary reflex pathways.

Theme 40. Anatomy of the ear.

Ear. Development ear ontogeny. Anomalies of the ear. Parts of the ear: outer, middle and inner ear. Outer ear part of their structure. Average ear pieces.

Tympanic cavity wall content. Ossicles: their structure. Joints, ligaments, muscles of auditory ossicles. The combination of the tympanic cavity. Auditory tube: part structure. Inner ear, pieces,

topography. Bony labyrinth: vestibule, semicircular canals, cochlea, the structure. Membranous labyrinth: vestibular labyrinth, semicircular ducts, duct cranial, their structure. The mechanism of perception and ways of sound. Pathways of hearing and balance.

Topic 41. Organ of taste and smell. Skin, its derivatives. Conduction pathways

Olfactory system. Olfactory mucosa of the nose. Pathways of olfactory analyzer. Gustatory system. Taste buds of the tongue, their topography. Pathways of taste analyzer. The total cover. Skin: function. Types of skin sensitivity. Lacteal gland. Afferent pathways of skin sensation.

Topic 42. Practical skills on special sense organs.

Summary module 8. Vessels and nerves of the head and neck.

Specific objectives:

- Analyze classification of the cranial nerves.
- Define general principles of the structure of the cranial nerves different originally.
- Describe and show the structure of the I - XII pairs of the cranial nerves.
- Analyze the common structure of the vegetative ganglia of the head
- Define general principles of the structure and function of the cardiovascular system.
- Describe and show the arterial vessels of head and neck.
- Describe and show the veins of the head and neck.
- Define lymphatic vessels and nodes of the head and neck.
- Analyze the sources of the blood supply and innervation of the organs of head and neck.

Theme 43. Classification of the cranial nerves. General anatomy of the vegetative ganglia of the head. I, II, III, IV, VI, VIII pairs of the cranial nerves.

General description of the cranial nerves. General lines and differences of the structure of the cranial and spinal nerves. Classification of the cranial nerves by function (motive, sensible, mixed). Classification of cranial nerves originally. Development of the cranial nerves in connection with sense-organs (the I, II, VIII pairs), myotomes of the main somites (the III, IV, VI, XII pairs), with branchial arcs (the V, VII, IX, X, XI pairs). Differences of the structure of the cranial nerves, derivatives of cerebrum (the I, II pairs) are from other cranial nerves. General plan of the structure of the sensible and mixed cranial motorius. General plan of the structure of the vegetative ganglia of the head: roots and branches. The I, II pairs of the cranial nerves features of their anatomy. The IV, VI pairs : their nuclei, exit of nerves from a brain, from a skull, area of the innervation. The III pair of cranial nerves : nuclei, exit of nerve from a brain, from a skull, branches, composition of their fibres, area of innervation, connection with the vegetative ganglion of the head (by a ciliary ganglion). Anatomy of the VIII pair: parts, sensible ganglia, topography

Theme 44. The V pair of the cranial nerves

Anatomy of the cranial nerves: nuclei, localization, exit of the nerve from a brain, from skull, branch of nerves, composition of their fibres, topography, areas of innervation. V pair of the cranial nerves: intracranial part – nuclei, the trigeminal ganglion, sensible and motive roots. Branches of the V pair: composition of the fibres, exit from a skull, area of innervation, connection with the vegetative ganglia of the head.

Topic 45. VII, IX, X pairs of the cranial nerves. Vegetative ganglia of the head.

VII pair and intermediate nerve: nuclei, topography, branches, composition of their fibres, area of innervation. Connection of the branches of the intermediate nerve are with the vegetative ganglia of the head (pterygopalatine, submandibular, sublingual). IX pair: nuclei, exit of the nerve from a brain, from a skull, branches, composition of their fibres, area of innervation, connection with the vegetative ganglia of the head (oticum ganglion). X pair: nuclei, sensible ganglia, exit of nerve from a brain, from a skull, branch, area of innervation.

Topic 46. XI, XII pairs of the cranial nerves. Spinal nerves. Cervical plexus

XI pair: nuclei, exit of nerve from a brain, from a skull, area of innervation. XII pair: nuclei, exit of nerve from a brain, from a skull, area of innervation. Vegetative ganglia (pterygopalatine, ciliary, submandibular, sublingual, oticum): roots and branches, areas of innervation.

Topic 47. Aorta. Branches of aortic arc. Common and external carotid arteries. Arterial vessels of the head and neck.

Aorta, parts of aorta. Arc of aorta and its branch. Common carotid: topography, branches. Features of right and left common carotid. External carotid: topography, classification of the branches. Branches of external carotid: topography, areas of blood supply.

Topic 48. Internal carotid and subclavian arteries

Internal carotid: parts, topography. Branches of internal carotid: topography, areas of blood supply. Subclavian artery: parts, their topography. Features of the right and left subclavian artery. Branches of the subclavian artery: topography, areas of the blood supply. Blood supply of the head and spinal brain. Arterial circle of the brain. Intersystem arterial anastomoses in the area of the head and neck.

Theme 49. Venous vessels of the head and neck

Internal jugular vein: formation, topography, classification of the tributaries.

Intracranial and extracranial tributaries of the internal jugular vein.

Pterygoid plexus: topography, formation. Anastomoses are between the intracranial and extracranial tributaries of the internal jugular vein. External jugular vein: formation, topography, tributaries.

Anterior jugular vein: formation, topography, tributaries. Jugular venous arc: topography, formation.

Brachiocephalic vein: formation (roots), topography, tributaries. Superior vena cava: formation (roots), topography: formation (roots), topography, tributaries.

Topic 50. Anatomy of lymphatic vessels and nodes of the head and neck

Thoracic duct: roots, topography, place of inflow in the venous system. Right lymphatic duct: roots, topography, place of inflow in the venous system.

Jugular trunk: formation, topography, areas of collection of lymph, inflow to the lymphatic ducts.

Lymph nodes of the head: formation, topography, areas of collection of the lymph, ways of lymph outflow.

Lymph nodes of the neck: formation, topography, areas of collection of the lymph, ways of lymph outflow.

Topic 51. Practical skills: Vascularization and innervation of organs of the head and neck.

Vascularisation (arterial blood supply, venous and lymphatic outflow) and innervation of organs of the head and neck: mucous membrane of oral cavity, soft palate, tongue, upper and lower teeth, pharynx, palatine tonsil, parotid gland, submandibular gland, sublingual gland, mucous membrane of the nasal cavity, larynx, thyroid gland, eyeball, lacrimal gland, external muscles of eyeball, external ear, middle ear, internal ear, brain, cerebellum, brainstem, dura mater of cerebrum, masticatory muscles, muscles of the face (mimic), muscles of the neck, facial skin, temporomandibular joint.

Summary module 9. Anatomy of heart. Vessels and nerves of the trunk.

Specific objectives:

- Analyze development of heart in ontogenesis;
- Analyze anomalies and variants of development of heart;
- Describe and demonstrate the structure of heart;
- Describe the systemic and pulmonary circulation of the blood, fetal circulation.
- Identify the general principles of structure and function of blood vessels;
- Analyze the source and mechanism of development of arteries in embryogenesis;
- Analyze anomalies and variants of development of blood vessels;
- Describe and demonstrate the structure of the arteries of the thorax, abdominal cavity and lesser pelvic cavity;
- Identify the general principles of the structure and function of veins;
- Analyze the source and mechanism of development of veins in embryogenesis;
- Analyze anomalies and variations of venous vessels;
- Describe and demonstrate the structure of the veins of the trunk;
- Identify the general principles of the structure and function of lymphatic vessels;
- Identify the general principles of structure and function of peripheral autonomic nervous system (autonomic nervous system);
- Analyze the sources of blood supply and innervation of the thorax, abdominal cavity and pelvis.

Theme 52. Introduction to cardiovascular system. Anatomy of the heart. Systemic and pulmonary circulation. Fetal circulation.

General principles of the structure and function of the cardiovascular system.

Components of the vascular part of the cardiovascular system: arteries, veins, vessels of microcirculation. Lymphatic vessels, principles of their structure, function.

Theme 53. Anatomy of the heart: structure of wall, blood supply, pericardium.

A projection of heart on the anterior thoracic wall. Topography of heart. Form, position of heart. External structure of the heart. Cardiac chambers: its structure. Valves of heart. Structure of the wall of heart: endocardium, myocardium, epicardium. Conducting system of heart. Arteries and veins of heart. Pericardium its structure, pericardial cavity, content, sinuses.

Projection of heart and valves on the anterior thoracic wall. Age-related anatomy of heart. Systemic and pulmonary circulation of the blood. Fetal circulation.

Stages of development of heart in embryogenesis. Variants and anomalies of development of heart. Structural mechanisms of development of anomalies of heart.

Topic 54. General anatomy of the arterial vessels. Thoracic and abdominal aorta. Arteries of the pelvis.

Anatomic classification of the arteries (paracardial, magistral, ekstraorgan's and intraorgan's). Classification of the arteries by the structure of wall. Types of branching of the arteries. Distributional regularities of arteries in the organism of the human. Arterial intersystem and intrasystem anastomoses. Sources and mechanisms of development of arteries. Arterial arcs and their derivatives. Variants and anomalies of development of main arteries. Works of M.A. Tyhomyrova. Vessels of microcirculation, structure of their wall and function. Sources and mechanisms of formation of vessels of microcirculation. Works of the department of normal anatomy of Bogomolets National Medical University. Works of the department of normal anatomy of Danylo Halytsky Lviv National Medical University. The concept of collateral paths (bypass) flow of blood. Age features arteries. X-ray anatomy of the arteries

Aorta, its parts. Thoracic aorta: topography, classification of branches. Branches of thoracic aorta and area of their blood supply. Internal thoracic artery (branch of subclavian artery): topography, branches, areas of blood supply. Intrasystem and intersystem arterial anastomoses.

Abdominal aorta: topography, classification of the branches. Parietal branches of the abdominal aorta: topography, areas of blood supply. Visceral

branches of the abdominal aorta: pair and unpair. Pair visceral branches of abdominal aorta: topography and areas of blood supply. Unpair visceral branches of the abdominal aorta: topography and areas of blood supply. Intrasystem arterial anastomoses between the branches of the abdominal aorta. General iliac artery: formation, topography, branches. Internal iliac artery: topography, classification of the branches. Parietal and visceral branches of the internal iliac artery: topography, areas blood supplies intrasystem and intersystem arterial anastomoses.

Topic 55. General anatomy of the veins. Veins of the trunk. Intrasystem and intersystem venous anastomoses.

Anatomical classification veins (paracardial, trunks, ekstraorgan's and intraorgan's). Classification of veins by structure of wall. Types of tributary of the veins. Superficial veins, deep veins. Venous networks, venous plexus. Sources and mechanisms of development of the main veins. Variations and anomalies of the main veins. Works of M.A. Tyhomyrova. Age features of veins. X-ray anatomy of veins.

Superior vena cava: roots, tributaries, topography.

Azygos vein: formation, topography, classification of tributaries, areas of collecting venous blood.

Hemiazygos vein: formation, topography, classification of tributaries, areas of collecting venous blood. Veins of the spinal column. Inferior vena cava: roots, topography, classification tributaries. Parietal and visceral tributaries of the inferior vena cava, venous blood collection sites.

Portal hepatic vein: roots, topography, tributaries. Superior mesenteric vein: topography, tributaries, area of collection of venous blood. Inferior mesenteric vein: topography, tributaries, area of collection of venous blood. Splenic vein: topography, tributaries, area of collection of venous blood. Branching

of portal hepatic veins in the liver. Common iliac vein: roots topography. Internal iliac vein: topography, tributaries. Malformation pelvic plexus.

Venous intersystem anastomoses. Venous anastomoses intersystem cavo-caval anastomoses, porto-caval anastomoses and porto-cava-caval anastomoses.

Topic 56. General anatomy of the lymphatic vessels

Classification of lymph vessels. Lymphatic capillaries: wall structure and function. Lymph postcapillaries: wall structure and function. Lymphatic vessels wall structure and function. Superficial and deep lymph vessels. Lymphatic trunks: jugular, subclavian, broncho-mediastinal, lumbar, intestinal - their formation, topography, function. Lymph ducts: the thoracic duct, right lymphatic duct. The development of lymphatic vessels in embryogenesis. Variations and anomalies of the lymphatic ducts. Works of the Kiev anatomical school. Age-related structural features of lymphatic vessels. Lymph nodes. The lymph nodes of the chest: classification. Ways of lymph outflow from the lungs, heart and esophagus. The lymph nodes of the abdominal cavity: classification. Lymphatic vessels and lymph nodes stomach, small intestine, colon, liver, kidney, uterus, ovary. Lymph pelvic cavity: classification. Ways of lymph outflow from the pelvic organs.

Topic 57. Anatomy of the autonomic peripheral nervous system

General regularities of the structure and function of the autonomic peripheral nervous system (autonomic nervous system). Morphological differences in the structure of the somatic nervous system and autonomic nervous system.

Morphological differences in the structure of the reflex arc of the somatic nervous system and autonomic nervous system. Sympathetic and parasympathetic parts of the autonomic nervous system: morphological, functional differences, objects innervation. The centers of the autonomic nervous system in the brain and spinal cord. The peripheral division of the autonomic nervous system: autonomic nodes, nerves, autonomic plexus. Classification of vegetative nodes, their topography, preganglionic and postganglionic nerve fibers.

The sympathetic part of the autonomic nervous system. Centers in the spinal cord. Sympathetic trunk: topography, classification units, interstitial branches. White and gray connecting branches: education. topography. The branches of the cervical sympathetic trunk nodes, their topography and areas of innervation. Cerebral roots of vegetative nodes of the head. The branches of the thoracic sympathetic trunk nodes and their topography, areas of innervation. The branches of the lumbar sympathetic nodes their topography. areas of innervation. The branches of the sacral sympathetic trunk nodes, their topography areas of innervation.

The parasympathetic part of the autonomic nervous system. Cranial part: vegetative nodes of head their topography, roots, branches, areas of innervations. Pelvic part. Visceral plexus: cranio-cervical portion of the thoracic, abdominal part of the pelvic. Aortic plexus, heart plexus, esophageal plexus, pulmonary plexus - their education, areas of innervation. Abdominal part: abdominal aortic plexus: its secondary plexus. their topography and components, areas of innervation. Sources of formation, composition of fibers ventral aortic plexus

Topic 58. Vascularization and innervation of the walls of thorax, abdominal, pelvic cavities. Practical skills.

Vascularization (blood circulation, lymphatic and venous outflow) and innervation of the walls and the chest cavity: anterior, posterior and lateral walls of the chest cavity, diaphragm, trachea, bronchi, lungs, pleura, pericard, esophagus.

Vascularization (arterial blood supply venous and lymphatic flow) and innervation and walls of the abdomen: anterior, posterior and lateral walls of the abdominal cavity, spinal cord, liver, gall bladder, stomach, small intestine

(duodenum, ileum and jejunum), colon, pancreas, kidneys, adrenal glands, spleen. Vascularization (arterial blood supply. venous and lymphatic outflow) and the walls and innervation of the pelvic cavity: the walls of the pelvis, perineum, urinary bladder, urethra, ovaries, uterus, fallopian tubes, vagina, external female genital organs, seminal vesicles, prostate, external male genital organs.

Summary module 10. Vessels and nerves of the upper and lower extremities

Specific objectives:

- Describe and demonstrate the vessels of the upper extremities;
- Describe and demonstrate the blood vessels of lower extremities;
- Identify the general principles of structure and function of the peripheral nervous system;
- Describe and demonstrate the structure of the somatic nerve plexus;
- To analyze the source of blood supply and innervation of the skin, muscles and joints of the upper limb;
- To analyze the source of blood supply and innervation of the skin, muscles and joints of the lower extremities.

Topic 59. Vessels of the upper extremity.

Arteries of the upper limb. Axillary artery: topography, parts, branches, areas of blood supply. Brachial artery: topography, branches, areas of blood supply. Radial artery: topography, branches, areas of blood supply. Ulnar artery: topography, branches, areas of blood supply. Ulnar network sources of formation. Dorsal carpal network: topography, formation sources, branches, areas of blood supply. Palmar carpal net: topography, sources of formation, areas of blood supply. Superficial palmar arc: topography. formation sources, areas of blood supply. Deep palmar arch: topography, sources of formation. areas of blood supply. Arterial anastomoses of the upper extremity. Projections of upper extremity arteries to the skin.

The veins of the upper limb: classification. Superficial and deep veins of the upper extremity: their characteristics, patterns of topography and structure.

Axillary vein: topography, tributaries. Superficial and deep lymph vessels of the upper extremity.

Lymph nodes of the upper limb: classification.

Topic 60. Introduction to the peripheral nervous system. Spinal nerves. General plan of formation of somatic nerve.

The arteries of the lower limbs. External iliac artery: topography, branches, areas of blood supply. Femoral artery: topography, branches, areas of blood supply.

Popliteal artery: topography, branches. areas of blood supply. Front tibia artery: topography, branches, areas of blood supply. Posterior tibial artery: topography, branches, areas of blood supply.

Knee articular network: sources of formation. Lateral malleolar network: topography, sources of formation, areas of blood supply. Medial malleolar net: topography, sources of formation, areas of blood supply. The arteries of the foot: dorsal artery of foot, lateral plantar artery medial plantar artery - their topography and branches, areas of blood supply. Arterial anastomoses of the lower limbs. The projection of the lower extremity arteries to the skin.

The veins of the lower limb: classification. Superficial and deep veins of the lower limbs: their characteristics, patterns of topography and structure. Superficial and deep lymphatic vessels of the lower limbs. The lymph nodes of the lower limb: classification.

Topic 61. Vessels of the lower extremity.

Components of the peripheral nervous system: nerves, ganglia, nerve plexus, nerve endings. General plan of the nerve. Vessel-nerve bundles.

Classification nerves. Segmental distribution of peripheral nerves. Ganglia: classification. General plan of sensitive sites. Spinal nerve: formation, composition of fibers, twigs; according to the spinal cord's segments. Rear branches of spinal nerves: structure of fibers, topography, general patterns of innervation. Posterior branch of the cervical, thoracic, lumbar, sacral and coccygeal nerves. Anterior branches of spinal nerves: structure of fibers. General regularities of formation of somatic nerve plexus. General laws of anatomy anterior branches of thoracic nerves. Connection spinal nerves with the autonomic nervous system.

Cervical plexus: sources of formation, topography, branches, areas of innervations. Brachial plexus: sources of formation, topography. Trunks of the brachial plexus. Classification of branches. Supraclavicular part: short branches of the brachial plexus, their topography and areas of innervation. Subclavian of: beams brachial plexus. Long branches of the brachial plexus: formation, topography, areas of innervation. The projection of the long branches of the brachial plexus in the skin. Topogpaphoanatomy relationship between nerves and blood vessels of the upper extremities.

Topic 62. Somatic nerve plexuses: cervical, brachial, lumbar, sacral, coccygeal. Thoracic nerves.

Lumbar plexus: sources of formation, topography, branches areas of innervation. Sacral plexus: sources of formation, topography, classification of branches. Short branches of the sacral plexus: topography. areas of innervation. Long branches of the sacral plexus: topography, areas of innervation. Coccygeal plexus: sources of formation, topography, branches, areas of innervations. Thoracic nerve: branches. Intercostal nerves: topography, composition of fibers, branches, areas of innervations.

Topic 63. Vascularization and innervation of the upper and lower extremities. Blood supply and innervation of the muscles of the back. Practical skills.

Vascularization (arterial blood supply and venous drainage) and innervation of the upper extremity joints: upper extremity joints, shoulder joint, elbow joint, radiocarpal joint.

Vascularization (blood circulation, lymphatic and venous outflow) and the innervation of the muscles of the upper extremity: shoulder girdle muscles, shoulder muscles, muscles of the forearm, hand muscles.

Vascularization (arterial blood supply and venous drainage) and innervation of the lower extremity joints: hip track joint, ankle joint. Vascularization (blood circulation, lymphatic and venous outflow) and the innervation of the skin and muscles of the lower extremities: muscles of the pelvis, thigh muscles, leg muscles, muscles of the foot.

Vascularization (blood circulation, lymphatic and venous outflow) and innervation and back muscles, chest and abdomen.

3. Educational Discipline Structure

Theme	Lectures	Practices	Self-work
Summary module 1 Introduction to Human Anatomy. Anatomy of bones			
1. Object and tasks of anatomy. Research methods in an anatomy. Basic modern directions of development of anatomy. Kyiv anatomical	2	2	8
2. Frontal, parietal, occipital, ethmoid bones.		2	
3. Sphenoid and temporal bones, canals of the temporal bone.		2	
4. Bones of the face. Orbit. Nasal cavity.		2	
5. Base of skull. Temporal fossa, infratemporal fossa, pterygopalatine fossa		2	8
6. Bones of upper limb.		2	
7. Bones of lower limb.		2	8
8. Practical skills from anatomy of the bones of the skeleton		2	
Together for content modules 1	2	16	24
Summary module 2. Connection of skeletal bones.			
9. Anatomy of the continuous and discontinuous connections between bones. Development of the connections between bones in ontogenesis. Connection between the bones of the trunk and between the bones of the skull.	2	2	8
10. Connection between the bones of the upper		2	
11. Connection between the bones of the lower limbs. Practical skills		2	
Together for content modules 2	2	6	8
Summary module 3. Muscular system.			

12. Muscle as an organ. Classification of the muscles. Development of the skeletal muscles. Anatomy of the muscles and fasciae of the back.	2	2	
13. Muscles and fasciae of the chest and abdominal wall. Diaphragm. Inguinal canal.		2	
14. Muscles and fasciae of the head.		2	8
15. Muscles of the neck. Topography of the neck.		2	8
16. The muscles of the upper limb.		2	
17. The muscles of the lower limb.		2	
18. Fascia and the topography of the upper and lower limbs. Practical skills		2	
Together for content modules 3	2	14	16
Summary module 4. Splanchnology. Anatomy of the digestive system.			
19. Introduction to splanchnology. Classification of internal organs. Anatomy of the oral cavity. Anatomy of the tongue. Palate. Anatomy of the salivary glands.	1	2	8
20. Anatomy of the teeth.	1	2	10
21. Anatomy of the pharynx, esophagus, stomach. Anatomy of the intestine, pancreas. The area anterior abdominal wall		2	
22. Liver, gallbladder. Anatomy of the peritoneum. Practical skills		2	4
Together for content modules 4	2	8	22
Summary module 5. Respiratory, endocrine, immune system. Urinary system.			
23. Total anatomy of the respiratory system. Embryogenesis of the respiratory system.	0,5	2	
24. Anatomy of the trachea, main bronchi, lungs. Pleura. Mediastinum		2	
25. Anatomy of the urinary system (kidneys, ureters, bladder, urethra).	0,5	2	6
26. Anatomy of the male reproductive organs. Perineum	0,5	2	6
27. Anatomy of the female reproductive organs. Mammary gland.	0,5	2	
28. Anatomy of the immune and endocrine systems. Practical skills		2	6
Together for content modules 5	2	12	18
Summary module 6. Central nervous system.			
29. Introduction to the CNS. General principles of the structure of reflex arcs. Gray and white matter of the CNS. Development of the central nervous system. External and internal structure of the spinal cord.	2	3	
30. Brain development in embryogenesis. Anatomy of the medulla oblongata and pons.		3	
31. Cerebellum. Fourth ventricle. Rhomboid fossa		3	6
32. Anatomy of the midbrain and diencephalon		3	
33. Cortex of the brain its division, components, functions. Lateral ventricles.		3	
34. Pallium. Localization functions in the cerebral cortex		3	
35. Basal nuclei. White matter.		3	12

Meninges of the brain and spinal cord. Formation and ways of circulation of cerebrospinal fluid.			
36. Ascending tracts of CNS.		3	6
37. Descending tracts of CNS.		3	
38. Anatomy of the CNS. Practical skills.		3	
Together for content modules 6	2	30	24
Summary module 7. Sensory organs.			
39. Anatomy of the sensory organs. Eye and structures of the formations.	1	3	
40. Anatomy of the ear. Pathways of hearing and balance.	0,5	3	
41. Organ of the taste. Organ of the smell. Pathways of the taste and smell. The skin, its derivatives. Pathways skin analyzer.	0,5	3	8
42. Sensory organs. Practical skills		3	
Together for content modules	2	12	8
Summary module 8. Vessels and nerves of the head and neck.			
43. Classification of the cranial nerves. I, II, III, IV, VI, VIII cranial nerves.	2	3	
44. V cranial nerve.		3	
45. VII, IX, X cranial nerves.		3	
46. XI and XII cranial nerves. Cervical nerve plexus.		3	
47. Aorta. Branches of the arc of the aorta. Common and external carotids.		3	6
48. Internal carotid and subclavian artery.		3	6
49. Veins of the head and necks Pterygoid venous plexus.		3	6
50. Lymph vessels and nodes of the head and neck.		3	6
51. Vascularization and innervation of the organs of the head and neck. Practical skills.		3	
Together for content modules 8	2	27	24
Summary module 9. Anatomy of the heart. The vessels and nerves of the trunk.			
52. Anatomy of the heart (I): topography of the heart, anatomy of the chambers. Large circle and pulmonary circulation.	1	3	6
53. Anatomy of the heart (II): structure of the wall of the heart, arteries and veins of the heart, pericardium. Projection valves to the anterior thoracic wall.		3	
54. The thoracic and abdominal aorta. Arteries of the pelvic cavity.	0,5	3	
55. Veins of the trunk. Intrasystem and intersystem venous anastomoses.	0,5	3	12
56. The lymphatic vessels of the thoracic cavity, abdominal cavity and pelvic cavity.		3	6
57. Anatomy of the autonomic part of the peripheral nervous system.		3	
58. Vascularization and innervation of the organs and walls of thoracic cavity, abdominal region and cavity of lesser pelvis. Practical skills.		3	
Together for content modules 9	2	21	24
Summary module 10. Vessels and nerves of the upper and lower limbs.			

59. Vessels of the upper limbs.	1	3	2
60. Spinal nerves. Brachial plexus.		3	
61. Vessels of the lower limbs.	1	3	2
62. Somatic nerve plexuses: cervical, lumbar, sacral, coccygeal. Thoracic nerves.		3	8
63. Vascularization and innervation of the upper and lower limbs. Practical skills.		2	
Together for content modules10	2	14	12
Total hours – 360/ 12,0 credits ECTS	20	160	180
The final control	Exam		

4. Thematic plan of lectures on human anatomy

Nº	Theme	Hours
1	Introduction to anatomy. Theory of the bone.	2
2	Anatomy of the skull. Artrosyndesmology .	2
3	Introduction to miology . Functional anatomy of the head and neck muscles.	2
4	Introduction to splanchnology. Digestive system.Oral cavity. Teeth.	2
5	Functional anatomy of respiratory, endocrine, immune and urogenital system.	2
6	General anatomy of central nervous system.	2
7	Anatomy of sensory organs.	2
8	General anatomy of peripheral nervous system. Autonomic part of the peripheral nervous system. Anatomy of cranial nerves.	2
9	General anatomy of cardiovascular system. Functional anatomy of the heart.	2
10	Functional anatomy of arterial , venous and lymphatic systems	2
	TOTAL	20

5. Topics of practices Plan of the practices on human anatomy

Nº	Theme	Hours
1	Anatomical terminology.Fundamental planes and axes in the body. General features of the vertebrae. Cervical, thoracic and lumbar vertebrae. Sacrum, coccyx, ribs, sternum.	2
2	Frontal, parietal, occipital, ethmoid bones.	2
3	Sphenoid and temporal bones, canals of the temporal bone.	2
4	Bones of the face. Orbit. Nasal cavity.	2
5	Base of skull. Temporal fossa, infratemporal fossa, pterygopalatine fossa.	2
6	Bones of upper limb.	2
7	Bones of lower limb.	2
8	Summary lesson 1. "Introduction to Human Anatomy. Anatomy of bones. "	2
9	General arthrology. Connections of the bones of the body. Connections of the skull bones .	2
10	Articulations of the upper limb.	2
11	Articulations of the lower limb. Practical skills and summarizing the material connection of the bones. Summary lesson 2. "Connection of the bones."	2
12	Muscles and fasciae of the back.	2
13	Muscles and fasciae of the chest. Diaphragm. Muscles and fasciae of the abdomen. Rectus sheath. Inguinal canal. Linea alba.	2
14	Muscles and fasciae of the head.	2
15	Muscles and fasciae of the neck. Topography.	2
16	The muscles of the upper limb.	2
17	The muscles of the lower limb.	2

18	Fascia and the topography of the upper and lower limbs. Practical skills and summarizing the material on the anatomy of the muscles. Summary lesson 3" Anatomy of the muscles."	2
19	Anatomy of the oral cavity. Palate. Anatomy of the tongue. Anatomy of the salivary glands.	2
20	Anatomy of the teeth.	2
21	Anatomy of the pharynx, esophagus, stomach. Anatomy of the small and large intestines, pancreas. Regions of the anterior abdominal wall.	2
22	Liver, gallbladder. Anatomy of the peritoneum. Practical skills and summarizing the material on the anatomy of the digestive system. Summary lesson 4" Splanchnology. Anatomy of the digestive system."	2
23	Anatomy of the external nose, nasal cavity, larynx.	2
24	Anatomy of the trachea, main bronchi, lungs. Pleura. Mediastinum.	2
25	Anatomy of the urinary system (kidneys, ureters, bladder, urethra).	2
26	Anatomy of the male reproductive organs. Perineum.	2
27	Anatomy of the female reproductive organs. Mammary gland.	2
28	Anatomy of the immune system. Anatomy of the endocrine system. Practical skills and summarizing the material on the anatomy of the respiratory, endocrine, immune, urinary and genital systems. Summary lesson 5"Respiratory, endocrine, immune systems. Urinary and genital systems."	2
29	Introduction to the CNS. General principles of the structure of the reflex arcs. Gray and white matter of the CNS. Development of the CNS in ontogenesis. External and internal structure of the spinal cord	3
30	Embryogenesis of brain. Anatomy of medulla oblongata and pons.	3
31	Anatomy of cerebellum. IV ventricle. Rhomboid fossa.	3
32	Anatomy of mesencephalon and diencephalon.	3
33	Cortex, its divisions, elements, and functions. Olfactory brain. Lateral ventricles.	3
34	Relief of cerebral cortex. Localization of functions in the cerebral cortex of the brain.	3
35	Basal nuclei. White matter of cerebral hemispheres. Meninges of the brain and spinal cord. Formation and circulation of the cerebrospinal fluid. Exit of 12 pairs of cranial nerves from the brain and skull.	3
36	Ascending pathways.	3
37	Descending pathways.	3
38	Practical skills and summarizing the material on the anatomy of the CNS. Summary lesson 6 "Anatomy of the CNS".	3
39	Anatomy of the sense organs. Anatomy of the eye. Pathway of the visual analyzer.	3
40	Anatomy of the ear. Pathways of hearing and balance.	3
41	Organ of taste. Organ of smell. Pathways of the taste and smell. Skin, its derivatives. Pathways of tactile analyzer.	3
42	Practical skills and summarizing the material on the anatomy of the sense organs. Summary lesson 7: "Sensory organs".	3
43	Classification of cranial nerves. I, II, III, IV, VI, VIII pairs of cranial nerves.	3
44	V pair of cranial nerves	3
45	VII, IX, X pairs of cranial nerves. Vegetative nodes of the head.	3
46	XI, XII pairs of cranial nerves. Spinal nerves. Cervical plexus.	3
47	Aorta. Branches of the aortic arch. Common and external carotid arteries.	3
48	Internal carotid and subclavian arteries.	3
49	Veins of the head and neck. Pterygoid venous plexus.	3

50	Lymph nodes and vessels of the head and neck	3
51	Practical skills and summarizing the material on the anatomy of the vessels and nerves of the head and neck. Vascularization and innervation of the head and neck. Summary lesson 8: "The vessels and nerves of the head and neck"	3
52	Anatomy of the heart (I): topography of the heart. Anatomy of the heart chambers. Systemic and pulmonary circulation.	3
53	Anatomy of the heart (II): structure of wall of the heart, blood supply to the heart, pericardium. Projection of the heart on the anterior wall of the thoracic cavity.	3
54	Thoracic and abdominal aorta. Pelvic arteries	3
55	Veins of the trunk: superior vena cava, azygos and hemiazygos veins, inferior vena cava, pelvic veins. Portal hepatic vein. Intrasystemic and intersystemic venous anastomoses.	3
56	Lymphatic vessels and nodes of thoracic, abdominal and pelvic cavities	3
57	Autonomic part of the peripheral nervous system. Sympathetic part of ANS. Parasympathetic part of the ANS. Visceral plexuses.	3
58	Practical skills and summarizing the material on the heart, blood vessels and nerves of the trunk. Vascularisation and innervation of thoracic, abdominal and pelvic cavities. Summary 9: "Anatomy of the heart. Vessels and nerves of the trunk "	3
59	Arteries, veins, lymph vessels and nodes of the upper limb.	3
60	Brachial plexus.	3
61	Arteries, veins, lymph vessels and nodes of the lower limb.	3
62	Lumbar plexus. Sacral plexus. Coccygeal plexus. Thoracic nerves.	3
63	Practical skills and summarizing the material on vessels and nerves of the upper and lower limbs. Vascularisation and innervation of the upper and lower limbs. Summary lesson 10: "Vessels and nerves of the upper and lower limbs".	2
	Total:	160

6. The self-work study

№	Topic	Hours	Type of control
Summary lesson 1. "Introduction to Human Anatomy. Anatomy of bones "			
1	The main stages of the history of anatomy. The history of development of Ukrainian anatomical schools in the XX - XXI centuries. Lviv anatomy school.	8	Current control in practical classes
2	Individual, age- and gender-related peculiarities of the structure of the skull.	8	
3	Thoracic cage in general. Pelvis in general.	8	
	Total:	24	
Summary lesson 2. "Connections of the bones."			
1	Biomechanics of joints	8	Current control in practical classes
	Total:	8	
Summary lesson 3. "Anatomy of the muscles."			
1	Intrafascial spaces of the head	8	Current control in practical classes
2	Neck topography (schematically)	8	
	Total:	16	

Summary lesson 4. "Splanchnology. Anatomy of the digestive system. "			
1	Development of the teeth. Anomalies of temporary and permanent teeth development.	8	Current control in practical classes
2	Physiologic and pathologic occlusions (schematically)	6	
3	Teeth formulas of different age groups.	4	
4	Peritoneum formation	4	
	Total:	22	
Summary lesson 5. Respiratory, endocrine, immune systems. Urinary and genital systems.			
1	Functional anatomy of the endocrine organs.	6	Current control in practical classes
2	Schematic depiction of the structural and functional units of parenchymatous organs.	6	
3	X-ray anatomy of the internal organs.	6	
	Total:	18	
	Total for the 1st semester:	88	

Summary lesson 6. "Anatomy of the CNS".			
1	Circulation of the cerebrospinal fluid (schematically).	6	Current control in practical classes
2	Associative, commissural and projective pathways (schematically).	6	
3	Exit of the 12 pairs of cranial nerves from the brain and skull.	6	
4	Projection of the nuclei of the cranial nerves III - XII.	6	
	Total:	24	
Summary lesson 7. "Sensory organs".			
1	Derivatives of the skin.	8	Current control in practical classes
	Total:	8	
Summary lesson 8. "Anatomy of the vessels and nerves of the head and neck".			
1	Features of the topography of the branches of the anterior group of the external carotid artery. Topographic parts of the maxillary artery.	6	Current control in practical classes
2	Cerebral arterial circle of Willis.	6	
3	Lymph nodes of the head. Lymphatic outflow from the organs of the neck.	6	
4	Pterygoid venous plexus. Formation of anterior and external jugular veins.	6	
	Total:	24	
Summary lesson 9. "Anatomy of the heart. Vessels and nerves of the trunk ".			
1	Fetal circulation.	6	Current control in practical classes
2	Intersystemic and intrasystemic arterio-arterial anastomoses.	6	
3	Porto-caval and cavo-caval anastomoses.	6	
4	Formation of thoracic and right lymphatic ducts (schematically).	6	
	Total:	24	
Summary lesson 10. "Vessels and nerves of the upper and lower limbs".			
1	Arterial nets of the upper and lower limbs.	4	Current control in practical classes
2	Areas of sensory and motor innervation of the upper and lower limbs by somatic plexuses.	8	
	Total:	12	
	Total for the 2nd semester:	92	

7. Individual lessons - are not planned.**8. Guidelines on the method of self-training of students**

- Studying at the Department of Anatomy involves a significant amount of factual material and plenty of Latin terms for each class that must be learned by student. In this regard, it is advisable to start preparing for a class in a few days.
- Methods of preparing:
 - First read the textbook topic in general to have a general idea of the material; - During the second, more in-depth reading, make **brief notes** that reflect the basic facts;
 - Write down in the **vocabulary** and learn all the Latin terms and their equivalents in Ukrainian based on the topic;
 - Inspect drawings of all anatomical structures which are described in the material in the atlas and textbook;
 - It is advisable to answer the questions on the lesson topic specified in the methodological guidelines;
 - It is advisable to make drawings and diagrams that help learn the facts; - Draw a **schemes and pictures** of various anatomical structures provided for in the methodological guidelines during independent work of the student;
 - On the eve of the class it is advisable to explore and study anatomical structures on the anatomical preparations according to the questions specified in the guidelines (**practical skills**);
 - At the tutorials, which are held by department teachers based on schedule, a student can get answers to difficult questions of topic;
 - It is an asset if a student studies some questions on the topic or topic as a whole from various textbooks, manuals, uses computer technology;
 - Some of the most difficult and confusing questions can be posed by the student to the teacher at the beginning of the class;
 - During the lecture the student must make **lecture notes**, based on which he/she prepares to questions from lecture material.

9. Teaching methods:

- Verbal methods: Lecture, discussion;
- Visual Methods: illustration, demonstration;
- Practical methods: implementation of practical works and solve situational exercises to develop skills;
- Self-work of students with understanding and learning;
- Using an educational computer program on discipline.

10. Methods of control

Current control is based on the control of theoretical knowledge, practical skills and abilities.

Forms current control:

- Oral survey (frontal, individual, combined)
- Practical test existing professional skills
- Test control (open and closed tests)

Self-work of students is evaluated at workshops and is part of the final grade of the student.

Final control is carried out in the form of a written exam that includes:

- a) tests (40), drawn up in accordance with the themes of content modules;
- b) oral examination - complex questions (4), which include theoretical material and practical skills from summary modules.

11. Distribution points that get students

Types of control (current and final).

Form of final control according to the curriculum - credit (semester) exam (second semester).

Evaluation criteria.

Current control is performed during the training sessions and aims at checking mastering educational material. The form of the current control during the classes defined working curriculum subjects. In evaluating the mastering of each topic for current educational activity the student score for the 4-point scale (traditional) scale taking into account the approved evaluation criteria.

Excellent ("5") - The student correctly answered the test format 90-100%

A. Right, clearly and logically and completely answer all questions standardized current theme, knows material previous themes (baseline knowledge) answers the question of lectures and the question of self-work. Correctly demonstrates preparation (knowledge of practical skills) correctly uses the Latin term. Makes synthesis, complements its answer of additional knowledge of literature. Wrote in vocabulary all latin terms and their equivalents in ukrainian language of the theme. Performed all tasks provided of methodological developments during self-work.

Written essay on the proposed topic or self-made anatomical preparation (individual work).

Good ("4") - A student answered correctly by 70-90% of tests format A. That's right, sometimes with the help of explanatory questions, answers standardized questions the current theme, know material previous themes (baseline knowledge), answers questions and lectures question of self-work. Correctly demonstrates preparation (knowledge of practical skills). The student correctly uses the latin term. Wrote in vocabulary all latin terms and their equivalents in ukrainian language of the theme. Completed all tasks provided methodological developments during self-work.

Satisfactory ("3") - The student correctly answered of 50 -70 % test format A. Incomplete, using explanatory questions, answers standardized questions of current topics on questions from previous material themes (baseline knowledge), inaccurate and incomplete answers questions lectures and questions of self-work. Alone cannot build a clear, logical answer. During response and demonstrate preparation (knowledge of practical skills) student makes minor errors. The student uses the latin term correctly or fully know the Latin terms on the topic of this lesson and previous lessons. Wrote in dictionary not full latin terms and it equivalents in ukrainian language classes on the topic. Completed not fully tasks are provided of methodological developments during self-work.

Unsatisfactory ("2") - The student answered less than 50% of tests format

A. Do not know the material of the current theme. Either answer the questions of the current theme insufficient, incomplete, cannot build a logical answer, did not respond to further questions, do not understand the content material, do not know questions of previous material themes (baseline knowledge), does not answer the questions of lectures and issues self-work. During response and demonstrate preparation (knowledge of practical skills) student makes significant, serious errors. The student does not know latin terms on the theme of this lesson and previous lessons, or take latin term not correctly. Not wrote in dictionary latin terms and their equivalents in the ukrainian language studies on the theme. Not completed the task, provided methodological developments during self-work.

12. Evaluation of self-student work

The material for the students' self-work, which provides practical employment in the subject of both audience work is evaluated under the current control on the relevant the theme auditorium classes. Evaluation themes submitted to self-study and not included in the themes of the training sessions are monitored during final testing.

The evaluation which are putted by traditional assessment scale are converted into points.

For courses which form the final control is test:

The maximum number of points that a student can collect for current educational activity per semester for admission to exam is 200 points.

The minimum number of points that a student must collect for current educational activity per semester for admission to exam is 120 points. Calculating the number of points is based on student evaluations received by traditional scale while learning subjects by calculating the arithmetic average (AA), rounded to two decimal places. The resulting value is converted into points by multi-scale as follows:

$$x = \frac{CA \times 200}{5}$$

Table 1

Conversion of the average score for current activity in multi-point scale for courses that are completed by test

4- point scale	200-point scale	4- point scale	200-point scale	4- point scale	200-point scale	4- point scale	200-point scale
5	200	4.45	178	3.92	157	3.37	135
4.97	199	4.42	177	3.89	156	3.35	134
4.95	198	4.4	176	3.87	155	3.32	133
4.92	197	4.37	175	3.84	154	3.3	132
4.9	196	4.35	174	3.82	153	3.27	131
4.87	195	4.32	173	3.79	152	3.25	130
4.85	194	4.3	172	3.77	151	3.22	129
4.82	193	4.27	171	3.74	150	3.2	128
4.8	192	4.24	170	3.72	149	3.17	127
4.77	191	4.22	169	3.7	148	3.15	126
4.75	190	4.19	168	3.67	147	3.12	125
4.72	189	4.17	167	3.65	146	3.1	124
4.7	188	4.14	166	3.62	145	3.07	123
4.67	187	4.12	165	3.57	143	3.02	121
4.65	186	4.09	164	3.55	142	3	120
4.62	185	4.07	163	3.52	141	Less than 3	Not enough
4.6	184	4.04	162	3.5	140		
4.57	183	4.02	161	3.47	139		
4.52	181	3.99	160	3.45	138		
4.5	180	3.97	159	3.42	137		
4.47	179	3.94	158	3.4	136		

For courses which form the final control is exam:

The maximum number of points that a student can collect for current educational activity per semester for admission to exam is 120 points.

The minimum number of points that a student must collect for current educational activity per semester for admission to exam is 72 points.

Calculating the number of points is based on student evaluations received by traditional scale while learning subjects by calculating the arithmetic average (AA), rounded to two decimal places. The resulting value is converted into points by multi-scale as follows:

$$x = \frac{CA \times 120}{5}$$

Table 2

Conversion of the average score for current activity in multi-point scale for courses that are completed by exam

4- point scale	200- point scale		4- point scale	200- point scale		4- point scale	200- point scale		4- point scale	200- point scale
5	120		4.45	107		3.91	94		3.37	81
4.95	119		4.41	106		3.87	93		3.33	80
4.91	118		4.37	105		3.83	92		3.29	79
4.87	117		4.33	104		3.79	91		3.25	78
4.83	116		4.29	103		3.74	90		3.2	77
4.79	115		4.25	102		3.7	89		3.16	76
4.75	114		4.2	101		3.66	88		3.12	75
4.7	113		4.16	100		3.62	87		3.08	74
4.66	112		4.12	99		3.58	86		3.04	73
4.62	111		4.08	98		3.54	85		3	72
4.58	110		4.04	97		3.49	84		Less than 3	Not enough
4.54	109		3.99	96		3.45	83			
4.5	108		3.95	95		3.41	82			

Self-work of students is evaluated during the current control of theme on the appropriate lesson. Learning of themes which start out only on self-work are controlled at the final control.

Final control is carried out with the aim of evaluation of learning on a particular educational qualification level and at the individual stages completed its national scale and scale ECTS. Final control includes semester control and certification of student.

Semester control is carried out in the forms of semester exam or test (differentiated test) from a specific discipline in the amount of educational material specified in the work program of the course and in the terms established working curriculum, individual curriculum the student.

Semester (differentiated) test - a form of final control, which is to assess the mastering of educational material on specific discipline solely on the basis of the performance of all types of educational works provided a working curriculum.

Semester (differentiated) test is determined by result of current control.

Semester exam - a form of final control of mastering of student theoretical and practical material on separate discipline of semester, carried out as a control measure. A student is considered to be admitted to the semester exam with discipline if he visited all the prescribed auditory lessons which are provided by curriculum on discipline, performed all kinds of work which are provided by the work program of this discipline and while studying it during the semester was taken number of points, no less than the minimum (72 points). Semester exam carried during the exam session, according to schedule. The form of the exam must be standardized and include control of theoretical and practical skills.

The maximum number of points that a student can get in the passing the examination is 80. The minimum number of points in the passing the examination - at least 50.

- a) tests (40), which are formed in accordance with the themes of summary modules 1 – 12: 40 points;
- b) oral examination - complex questions (4), which include theoretical material and practical skills of summary modules: 40 points (1 question = 10 points).

Determination of the number of points that a student collected from discipline:

Evaluation of the discipline, which culminating with exam is defined as the sum of points for current educational activity (at least 72) and points for the exam (at least 50).

Evaluation of the disciplines, the final form control of which is a test (differentiated test) is based on current educational activities and expressed bipoints scale "passed" or "not passed". To enrollment a student must obtain for current learning activity score of at least 60% of the maximum number of points in the discipline (120 points).

Points of discipline are independently converted as in scale ECTS, as a 4point scale. Points of ECTS scale not converted in 4-point scale and vice versa.

Points of students who study in one specialty, considering the number of scored points, are ranked on a ECTS scale as follows:

Table 3:

Evaluation of ECTS	Statistical index
A	Top 10% of students
B	Next 25% of students
C	Next 30% of students
D	Next 25% of students
E	The last 10% of students

Points of discipline for students who successfully completed the program are converted in traditional 4-point scale by absolute criteria, which are listed in the table below:

Table 4:

Points from discipline	Score in 4-point scale
from 170 to 200	5
from 140 to 169	4
from 139 to the minimum number of points that a student must collect	3
less than the minimum number of points that a student must collect	2

Points of ECTS scale not converted in 4-point scale and vice versa because the ECTS scale and 4-point scale are independent.

Objective evaluation of educational activities of students is tested by statistical methods (the correlation coefficient between ECTS score and score in a national scale).

13. Indicates methodical, didactic literature for to ensure discipline. syllabus of the discipline theses of lectures of the discipline guidelines for teacher training materials for self work of students test and control tasks for workshops questions and objectives for total control (examination)

14. List of educational materials

1. Human Anatomy in three volumes A.S. Holovatskyi, V.H. Cherkasova, M.R.Sapin, Ya.I. Fedonyuk / Vinnytsia: Nova knyha, 2006,2007,2008.
2. Svyrydov O.I Human Anatomy. - Kyiv: Vyshcha shkola, 2000.- 399p.
3. Prives M.G., Lysenkov N.K., Bushkevych V.I. Human Anatomy.- Hypokrat, St. Petersburg: St. Petersburg house SPb MAPE, 2004 -720p.
4. Human Anatomy ed. By Sapin M.R./ Moscow: Medicine, 1996, vol.I, vol.II.
5. Sineļnikov R.D. Atlas of Human Anatomy. - Moscow: Medicine, 2004, vol.I, vol.II,vol.III, vol. IV.
6. The international anatomical nomenclature / edited by Bobryk I.I., Koveshnikova V.H.- Kyiv: Health 2001 –