



Human Anatomy

1. General information					
Faculty					
Educational Program (area, specialty, Level of higher education, type of study)	22 Healthcare, 221 Dentistry, second (major) level of higher education, full-time study				
Study year	2023-2024				
Name of the Subject, Code (<i>email address on the site of Danylo Halitskiy Lviv National Medical University</i>)	Human Anatomy OK-13 https://new.meduniv.lviv.ua/kafedry/kafedra-normalnoyi-anatomiyi/				
Department (<i>name, address, phone number, e-mail</i>)	Normal Anatomy Department 79010, 52 Pekarska str., Lviv phone. +380(322)368443, +380(322)757551 Kaf_normanatomy@meduniv.lviv.ua				
Head of Department (<i>e-mail</i>)	L.R. Matshuk-Vatseba DoS, professor Kaf_normanatomy@meduniv.lviv.ua				
Year of study	First year of study				
Semester	I, II semesters				
Type of subject	compulsory discipline				
Teachers	№	Surname, name	Scientific degree	Scientific grade	Contact e-mail
	1	Kyryk Khrystyna Andriijvna	PhD in medicine	Associate professor	morfologiya@gmail.com
	2	Besedina Anna Serhijvna	PhD in medicine	Associate professor	annabes@ukr.net
Erasmus yes/no (availability of discipline for students within the program <i>Erasmus+</i>)	Yes				
The person responsible for the syllabus (<i>the person to be commented on the syllabus, contact e-mail</i>)	M.V. Podoluk mariapodolyk1979@gmail.com R.J. Borys rborlv@ukr.net L.R. Matshuk-Vatseba lvatseba@gmail.com				
Number of credits ECTS	12,0				
<i>Number of hours (lectures / practical classes / self-study of students)</i>	20/160/180				
Language of studying	Ukrainian, English				
Information about consultations	Consultations are conducted by all lecturers according to the schedule approved at the meeting of the department and posted on the website of the department.				
<i>Address, telephone and rules of operation of the clinical base, office) (if necessary)</i>	-				
2. Brief review of the subject					
The working curriculum 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.

The working curriculum of the discipline is a normative document of the university, which is developed by the staff of the department for each academic discipline on the basis of the specialized standard of higher education in accordance with the curriculum.

The working curriculum should ensure: compliance of the content with the specialized standards of higher education through the direct connection of the content of the discipline with the goals of higher education (skills and abilities of the specialist defined in the OKX); compliance with licensing and accreditation conditions and requirements; compliance with "Standards and recommendations for quality assurance in the European Higher Education"; the possibility of using disciplinary competencies as an information base for the formation of diagnostic tools; unambiguous criteria for assessing academic achievement.

The working curriculum of the discipline and its content is a document that determines the amount of knowledge that must be mastered by the student in accordance with the requirements of educational qualifications of the future specialist, the algorithm for studying the discipline, taking into account interdisciplinary links, different courses of problems, the necessary methodological support, components and technology of assessment of students' knowledge.

The working curriculum as a normative document that lays down the ideology of the content of education and the organization of the educational process, determines the educational and methodological principles of the department; on its basis all educational and methodical materials for maintenance of educational process, including for independent work of students are developed.

3. Aim of the Subject

1. 1. The purpose of the course describes the relationship of the curriculum with the content of the entire educational program.
2. The purposes of teaching the discipline "Human Anatomy" follow from the objectives of the educational and professional training program for graduates of higher medical education and are determined by the content of those systemic knowledge and skills that must be mastered by a specialist. The knowledge that students receive from the discipline "Human Anatomy" is basic for the block of disciplines that provide natural science (block NS) and professional and practical (block PP) training.
3. 2. Learning objectives - provides information on the main objectives of the discipline.
4. The main tasks of studying the discipline "Human Anatomy" are:
 - Analyze information about the structure of the human body, its constituent systems, organs and tissues.
 - Demonstrate mastery of moral and ethical principles of attitude to a living person and their body as an object of anatomical and clinical research.
 - Interpret the patterns of prenatal and early postnatal development of human organs, options for variability of organs, malformations.
 - Interpret gender, age and individual characteristics of the human body.
 - Explain the patterns of development and features of the structure of human organs and systems at the macro- and microscopic levels.
 - Anticipate the interdependence and unity of structures and functions of human organs, their variability under the influence of environmental factors; determine the topographic and anatomical relationships of human organs and systems.
 - Determine the impact of social conditions and labor on the development and structure of the human body.
5. 3. Competences and learning outcomes, the formation of which provides the study of the discipline (general and special competencies).
6. -general competencies: basics for students to study topographic anatomy with operative surgery, histology, normal physiology, propaedeutics of clinical disciplines.
7. -special competencies (professional, subject): the formation of skills to apply knowledge of normal anatomy in the process of further study of all clinical disciplines and in future professional activities.
8. Learning outcomes: the knowledge that students receive from the discipline "Human Anatomy" is basic for the block of disciplines that provide natural science (block N) and professional and practical (block PP) training. Integrative final program learning outcomes, the formation of which is facilitated by the discipline: the ability to analyze information about the structure of the human body, its constituent systems, organs and tissues; demonstrate mastery of moral and ethical principles of attitude to a living person and his body as an object of anatomical and clinical research; to interpret the patterns of prenatal and early postnatal development of human organs, variants of variability of organs, malformations; interpret gender, age and individual features of the structure of the human body; explain the patterns of development and features of the structure of human organs and systems at the macro- and microscopic levels; to predict the interdependence and unity of structures and functions of human organs and their variability under the influence of environmental factors; determine the topographic and anatomical relationships of human organs and systems; determine the impact of social conditions and labor on the development and structure of the human body. Learning outcomes for the discipline: topographic anatomy and operative surgery, histology, normal physiology, surgery, therapy, radiology, neurology, dentistry, etc.

4. Preliminary requirements

For successful learning and mastering the competencies in the discipline "Human Anatomy" the student needs basic

knowledge and learning outcomes in the disciplines:

1. Medical biology, the basic knowledge of which allows the student to master the basics of comparative anatomy, to consider the development of organs not only in their ontogenesis, but also to understand the phylogeny of each body system.

2. Biophysics, the basic knowledge of which is necessary for students to understand the basic principles of complex modern devices, without which no clinical practice is possible today and which help to study human anatomy in life (ECG, CT, MRI, ultrasound, etc.).

1. 3. Latin, without the basics of which it is impossible for students to master the grammar of a doctor - anatomical nomenclature, which is an absolutely necessary condition for mastering the competencies of the discipline "Human Anatomy" and integration into the world medical community.

5. Results of the Course

Results

Code	Results	Matrix of competencies
<i>The code is created during syllabus completion (K – knowledge, S – skills, C – competencies, AR – autonomy and responsibility)</i>	<i>Learning outcomes determine what a student must know, understand and be able to perform, after completing the discipline. Learning outcomes follow from the set of learning goals. To enroll in the discipline, it is necessary to confirm the achievement of each learning outcome.</i>	<i>Symbol of the Program Learning Outcome Code in the Higher Education Standard</i>
K-1	essence, fundamental properties of the structure of the human body	3K1-15 ПРН17,18,19
K-2	features of development in the pre- and postnatal periods of ontogenesis of the human body	3K1-15 ПРН17,18,19
K-3	human embryo development	3K1-15 ПРН17,18,19
K-4	development of organs from embryonic layers	3K1-15 ПРН17,18,19
K-5	the concept of norms, variants and anomalies	3K1-15 ПРН17,18,19
K-6	the concept of individual variability	3K1-15 ПРН17,18,19
K-7	the concept of body constitution	3K1-15 ПРН17,18,19
K-8	body structure types	3K1-15 ПРН17,18,19
K-9	main periods of human ontogenesis	3K1-15 ПРН17,18,19
K-10	periods of fetal development	3K1-15 ПРН17,18,19
K-11	the role and significance of placenta	3K1-15 ПРН17,18,19
K-12	tissue classification	3K1-15 ПРН17,18,19
K-13	research methods in anatomy	3K1-15 ПРН17,18,19
K-14	patterns of structure of organs, systems and apparatuses	3K1-15 ПРН17,18,19
K-15	patterns of developmental defects	3K1-15 ПРН17,18,19
K-16	patterns of development of pathological conditions in disruption of organs' functions	3K1-15 ПРН17,18,19
K-17	variability of organs under the influence of environmental factors	3K1-15 ПРН17,18,19
S-1	solving situational problems from the main sections of the discipline	3K1-15 ПРН17,18,19
S-2	differentiate tissue components	3K1-15 ПРН17,18,19

S-3	be able to position the bones in proper relations	3K1-15 ПРН17,18,19
S-4	determine anatomical formations on the human skeleton	3K1-15 ПРН17,18,19
S-5	analyze the structure of the human skeleton	3K1-15 ПРН17,18,19
S-6	analyze the structure of continuous joints	3K1-15 ПРН17,18,19
S-7	determine the structure of synovial joints	3K1-15 ПРН17,18,19
S-8	be able to identify the main and additional elements of the joint	3K1-15 ПРН17,18,19
S-9	determine the structure of the viscera of the digestive system and their function	3K1-15 ПРН17,18,19
S-10	analyze the structure of the respiratory system, its topography	3K1-15 ПРН17,18,19
S-11	determine the structure and function of the genitourinary system	3K1-15 ПРН17,18,19
S-12	analyze the structure, topography and functions of the endocrine and immune systems	3K1-15 ПРН17,18,19
S-13	demonstrate the structure of the spinal cord on wet preparations	3K1-15 ПРН17,18,19
S-14	determine the main anatomical formations of the brain	3K1-15 ПРН17,18,19
S-15	determine the basic structures of the special senses	3K1-15 ПРН17,18,19
S-16	demonstrate on preparations the exit from brain and from skull of 12 pairs of cranial nerves; determine the branches of the cranial nerves, their area of innervation	3K1-15 ПРН17,18,19
S-17	demonstrate the topography and branching of the vessels of the head and neck	3K1-15 ПРН17,18,19
S-18	determine the branches of the thoracic and abdominal parts of the descending aorta	3K1-15 ПРН17,18,19
S-19	be able to recognize branches of peripheral nerves and branches of arteries on wet preparations	3K1-15 ПРН17,18,19
S-20	analyze the features of the topography of venous vessels	3K1-15 ПРН17,18,19
S-21	predict the impact of environmental factors on the human body	3K1-15 ПРН17,18,19
S-22	be able to determine topographic formations in body cavities containing blood vessels and nerves	3K1-15 ПРН17,18,19
S-23	differentiate the topography of the branches of peripheral nerves and vessels of the trunk	3K1-15 ПРН17,18,19
S-24	analyze the features of somatic and autonomic innervation of organs	3K1-15 ПРН17,18,19
S-25	determine the autonomic nerve plexuses of the abdominal	3K1-15 ПРН17,18,19

	cavity	
S-26	demonstrate on wet preparations lymph nodes of the human body	3K1-15 ПРН17,18,19
S-27	determine the location and explain the formation of vena cava	3K1-15 ПРН17,18,19
S-28	determine the anatomical areas of confluence of lymphatic ducts into the venous angles	3K1-15 ПРН17,18,19
S-29	analyze the formation and clinical significance of venous anastomoses	3K1-15 ПРН17,18,19
AR-1	acquisition of practical skills of positioning bones in proper relations	3K1-15 ПРН17,18,19
AR-2	determination of lines on the surface of the chest	3K1-15 ПРН17,18,19
AR-3	location of anatomical formations of the bones of the head, torso and limbs	3K1-15 ПРН17,18,19
AR-4	determination of the main elements of a joint	3K1-15 ПРН17,18,19
AR-5	identification of additional elements of a joint	3K1-15 ПРН17,18,19
AR-6	muscles preparation techniques	3K1-15 ПРН17,18,19
AR-7	techniques for dissecting viscera of the cavities	3K1-15 ПРН17,18,19
AR-8	techniques of preparation of blood vessels	3K1-15 ПРН17,18,19
AR-9	techniques of preparation of components of the lymphatic system	3K1-15 ПРН17,18,19
AR-10	peripheral nerve preparation techniques	3K1-15 ПРН17,18,19
AR-11	determination of the structures of the central nervous system	3K1-15 ПРН17,18,19

6. Course content

Course format (full-time or part-time)	Full-time	
Type of class	Number of hours	Number of groups
Lectures	20	8
Practical classes	160	8
Seminars	-	
Individual work	180	8

7. Course topics and their contents

Type of class	Topic	Contents	Code of the educational result	Teacher
L-1	Introduction to anatomy. General osteology.	Osteology as a science. Bone as an organ. Bone structure. Classification of bones. Bone function. Bone development	3K1-15 ПРН17,18,19	Assoc Prof Borys R.I., Assoc Prof Kyryk K.A., Assoc Prof Besedina A.S., Assoc Prof Bekesevych A.M.

L-2	Anatomy of the skull. General arthrology.	Anatomy of the skull, its development. Individual, age, gender-related characteristics of the skull. Anomalies of the skull. General concepts of bone connections. Development of bone joints. Classification of joints. Continuous connections of bones. Synovial bone connections. Fundamentals of kinematics of joints.	3K1-15 ІІРН17,1 8,19	Assoc Prof Borys R.I., Assoc Prof Kyryk K.A., Assoc Prof Besedina A.S., Assoc Prof Bekesevych A.M.
L-3	Introduction to myology. Functional anatomy muscles of the head and neck.	General myology. Muscle as an organ. Muscle structure. Muscle function. Classification. Muscle development. Muscle work. Fundamentals of biomechanics. Functional anatomy of the muscles of the head and neck.	3K1-15 ІІРН17,1 8,19	Assoc Prof Borys R.I., Assoc Prof Kyryk K.A., Assoc Prof Besedina A.S., Assoc Prof Bekesevych A.M.
L-4	Introduction to splanchnology. General anatomy of the digestive system. Anatomy of the oral cavity. Somatognathic system.	Learning the concept of "gut". Classification of viscera. The structure of hollow organs wall. The structure of parenchymal organs. Development of viscera. Development of embryonic cavity walls. Developmental anomalies. General information about the structure of the digestive system. Facial development. Anomalies. Somatognathic system. Tongue development. Anomalies. Development of the primary intestine. Turns of the stomach and intestinal loops. Developmental anomalies of the gut.	3K1-15 ІІРН17,1 8,19	Assoc Prof Borys R.I., Assoc Prof Kyryk K.A., Assoc Prof Besedina A.S., Assoc Prof Bekesevych A.M.
L-5	General anatomy of the respiratory, genitourinary, immune and endocrine systems.	Classification of respiratory tract. Structure and functions of the respiratory tract. Anatomical units. Stages of lung development in pre- and postnatal ontogenesis. Developmental anomalies of the respiratory system. Structure and functions of the kidney. The structure of the urinary tract. Development of urinary organs. Classification of immune system organs. Structure and functions of the central and peripheral organs of the immune system. General considerations on the structure of endocrine glands? Age-related features. Structure of the internal female and male genitalia. Development of internal female and male genitals. Developmental anomalies. External female and male genitals. Development of external female and male genitals.	3K1-15 ІІРН17,1 8,19	Assoc Prof Borys R.I., Assoc Prof Kyryk K.A., Assoc Prof Besedina A.S., Assoc Prof Bekesevych A.M.
L-6	General anatomy of CNS	Classification of the nervous system. The external and internal structure of the spinal cord. Primary and secondary cerebral vesicles, their derivatives. Cavities of the brain. Structure and function of the brain stem and cerebellum. Structure and functions of the derivatives of telencephalon. Cortical ends of analysers. Speech centers. Conducting pathways.	3K1-15 ІІРН17,1 8,19	Assoc Prof Borys R.I., Assoc Prof Kyryk K.A., Assoc Prof Besedina A.S., Assoc Prof Bekesevych A.M.
L-7	Anatomy of the special	Development of the special senses organs. Anatomy of the coatings and nucleus of the	3K1-15 ІІРН17,1	Assoc Prof Borys R.I.,

	sense organs.	eyeball. Refracting apparatus of the eye. Accommodation apparatus of the eye. Production and outflow of aqueous humour. Rods and cones. Formation of the optic nerve. Oculomotor apparatus, lacrimal apparatus, protective apparatus of the eye. Pathways of the visual analyzer, pathways of a pupillary reflex, parasympathetic and sympathetic ones, pathway of corneal reflex. Senses of smell and taste. Pathways of olfactory and gustatory analyzer. External, middle and inner ear. Walls of tympanic cavity, auditory tube (Eustachian tube), bony and membranous labyrinths, circulation of endo- and perilymph. The walls of the cochlear duct. Corti's organ of hearing. Balance receptors. Pathways of auditory and vestibular analyzers. Anatomy of skin and its derivatives. Breast, its gender-related features.	8,19	<i>Assoc Prof Kyryk K.A., Assoc Prof Besedina A.S., Assoc Prof Bekesevych A.M.</i>
L-8	General anatomy of the peripheral nervous system. Anatomy of the autonomic part of the peripheral nervous system. Anatomy of the cranial nerves.	General characteristics of the cranial nerves. Branches and areas of innervation of the trigeminal nerve (V). General information about the autonomic (vegetative) part of the nervous system and its distribution. The central part of the sympathetic autonomic nervous system. Peripheral part of the sympathetic autonomic nervous system. Central part of the parasympathetic autonomic nervous system. Peripheral part of the parasympathetic autonomic nervous system. Activity of the autonomic part of the nervous system. Main differences between the sympathetic and parasympathetic parts of the autonomic nervous system.	3K1-15 IIPH17,1 8,19	<i>Assoc Prof Borys R.I., Assoc Prof Kyryk K.A., Assoc Prof Besedina A.S., Assoc Prof Bekesevych A.M.</i>
L-9	General anatomy of the circulatory system. Functional anatomy of the heart.	Topography of the heart. External and internal structure of the heart. Conducting system of the heart. Blood supply and innervation of the heart. Heart development and anomalies.	3K1-15 IIPH17,1 8,19	<i>Assoc Prof Borys R.I., Assoc Prof Kyryk K.A., Assoc Prof Besedina A.S., Assoc Prof Bekesevych A.M.</i>
L-10	Functional anatomy of arterial, venous and lymphatic systems.	Development of arteries. Developmental anomalies. Morphology of arteries. Patterns of distribution of arteries. Classification of veins. Morphology of veins. Patterns of vein distribution. Venous anastomoses. Venous networks and plexuses. Features of venous blood outflow from the head and neck. Veins development. Developmental anomalies.	3K1-15 IIPH17,1 8,19	<i>Assoc Prof Borys R.I., Assoc Prof Kyryk K.A., Assoc Prof Besedina A.S., Assoc Prof Bekesevych A.M.</i>
P-1	Anatomical nomenclature. Axes and planes. Vertebrae features. Cervical, thoracic, lumbar vertebrae. Sacrum, coccyx, ribs, sternum.	The concept of the International Anatomical Nomenclature. Its importance for the study of anatomy and unification of the study of natural and clinical disciplines. Basic anatomical terms that describe the topography of anatomical objects and their main characteristics. Planes (sagittal, frontal,	3K1-15 IIPH17,1 8,19	<i>Assoc Prof Borys R.I., Assoc Prof Kyryk K.A., Assoc Prof Besedina A.S., Assoc Prof Bekesevych</i>

		horizontal) and axes (vertical, frontal, saggital), their characteristics, ways of description of bones and their parts. General information about the skeleton. Bone development (in ontogenesis). Primary and secondary bones. Classification of bones. Bone as an organ. Compact and spongy bone substances, their structure. Torso bones: vertebrae, ribs, sternum. The principle of segmentation in the structure of the axial skeleton. General characteristics of the spine. General plan of structure of a vertebrae. Features of structure of cervical, thoracic, lumbar vertebrae, sacrum and coccyx. Classification of ribs. Structure of ribs and sternum.		A.M. Assist Prof Sodomora O.O., Assist Prof Mykhalevych M.M., Assist Prof Logash M.V., Assist Prof Hnidyk I.V., Assist Prof Gres'ko N.I.
P-2	Frontal, parietal, occipital, ethmoid bones.	Development of skull. Structure of frontal, occipital, parietal, ethmoid bones. Location, main parts, anatomical formations, their practical significance, relation to the base of the skull, lateral and facial norms of the skull.	3K1-15 ІІPH17,1 8,19	Assoc Prof Borys R.I., Assoc Prof Kyryk K.A., Assoc Prof Besedina A.S., Assoc Prof Bekesevych A.M. Assist Prof Sodomora O.O., Assist Prof Mykhalevych M.M., Assist Prof Logash M.V., Assist Prof Hnidyk I.V., Assist Prof Gres'ko N.I.
P-3	Sphenoid and temporal bone. Temporal bone's canals.	Location, main parts, anatomical formations, their practical significance, relation to the base of the skull, lateral and facial norm of the skull. The practical significance of the canals of the temporal and sphenoid bones.	3K1-15 ІІPH17,1 8,19	Assoc Prof Borys R.I., Assoc Prof Kyryk K.A., Assoc Prof Besedina A.S., Assoc Prof Bekesevych A.M. Assist Prof Sodomora O.O., Assist Prof Mykhalevych M.M., Assist Prof Logash M.V., Assist Prof Hnidyk I.V., Assist Prof Gres'ko N.I.
P-4	Facial skull. Orbit, bone nasal cavity.	The structure of the lower jaw, upper jaw, chin, nasal, palatine, lacrimal, sublingual bones, ploughshare, lower nasal concha. Features of the structure and location of bones. Orbit, bony nasal cavity, Formation of the walls of the orbit and bony nasal cavity, their connection with the indentations on the	3K1-15 ІІPH17,1 8,19	Assoc Prof Borys R.I., Assoc Prof Kyryk K.A., Assoc Prof Besedina A.S., Assoc Prof Bekesevych A.M.

		skull.		Assist Prof Sodomora O.O., Assist Prof Mykhalevych M.M., Assist Prof Logash M.V., Assist Prof Hnidyk I.V., Assist Prof Gres'ko N.I.
P-5	External and internal bases of the skull. Temporal, infratemporal and pterygopalatine fossas.	Skull development in ontogenesis. Cerebral and facial parts of the skull. Cranial vault, outer and inner bases of the skull. Anterior, middle and posterior cranial fossae, temporal, infratemporal, pterygopalatine fossas. Their walls and connections. Age and gender-related features of the skull structure. Variants and anomalies of skull development. X-ray anatomy of the skull.	3K1-15 ІІРН17,1 8,19	Assoc Prof Borys R.I., Assoc Prof Kyryk K.A., Assoc Prof Besedina A.S., Assoc Prof Bekesevych A.M. Assist Prof Sodomora O.O., Assist Prof Mykhalevych M.M., Assist Prof Logash M.V., Assist Prof Hnidyk I.V., Assist Prof Gres'ko N.I.
P-6	Bones of the upper extremity.	Upper limb, its parts. Upper limb bones, their divisions. Upper limb girdle bones: clavicle, scapula; their structure. Bones of the free upper limb: humerus, forearm and hand bones, their structure. Development of bones of the upper extremity in ontogenesis. Variants and anomalies of development of the upper extremity bones.	3K1-15 ІІРН17,1 8,19	Assoc Prof Borys R.I., Assoc Prof Kyryk K.A., Assoc Prof Besedina A.S., Assoc Prof Bekesevych A.M. Assist Prof Sodomora O.O., Assist Prof Mykhalevych M.M., Assist Prof Logash M.V., Assist Prof Hnidyk I.V., Assist Prof Gres'ko N.I.
P-7	Bones of the lower extremity.	Lower limb: its divisions. Bones of the lower extremity, their parts. Lower limb girdle bones: hip bone; its structure. Parts of the hip bone, their structure. Bones of the free lower extremity: femur, tibia, foot; their structure. Development of bones of the lower extremity in ontogenesis. Variants and anomalies of the lower extremity bone development. Age and gender-related features of the structure of the extremities bones. Specific features of the structure of the bones of the upper and lower extremities due to the processes of anthropogenesis.	3K1-15 ІІРН17,1 8,19	Assoc Prof Borys R.I., Assoc Prof Kyryk K.A., Assoc Prof Besedina A.S., Assoc Prof Bekesevych A.M. Assist Prof Sodomora O.O., Assist Prof Mykhalevych M.M., Assist Prof Logash M.V., Assist Prof Hnidyk I.V.

				I.V., Assist Prof Gres'ko N.I.
P-8	Practical skills on bone anatomy. Summary 1 "Introduction to anatomy. Osteology.	Planes and axes, their characteristicsdescription of bones and their parts. General information about the skeleton. Bone development (in ontogenesis). General plan of the structure of the vertebrae. Features of the structure of the cervical, thoracic, lumbar vertebrae, sacrum, coccyx. Classification of ribs. The structure of ribs and sternum. The structure of the frontal, occipital, parietal, ethmoid bones. The practical significance of the canals of the temporal and ethmoid bones. The structure of the mandible, maxilla, palatine, nasal, palatine, lacrimal, hyoid bones, vomer, inferior nasal concha. Orbit, bony nasal cavity. Cerebral and facial parts of the skull. Cranial vault, outer and inner bases of the skull. Upper limb bones: divisions. Bones of the lower extremity: divisions.	3K1-15 IIPH17,1 8,19	Assoc Prof Borys R.I., Assoc Prof Kyryk K.A., Assoc Prof Besedina A.S., Assoc Prof Bekesevych A.M. Assist Prof Sodomora O.O., Assist Prof Mykhalevych M.M., Assist Prof Logash M.V., Assist Prof Hnidyk I.V., Assist Prof Gres'ko N.I.
P-9	General arthrology. Joints of the trunk. Bones connection of the head.	Classification of connections between bones. Types of synarthroses. Diarthroses. Accessory components of joints. Classification of joints by structure, shape of joint surfaces and by function. Types of movements and their analysis (axes of movements, planes of movements). Classification of vertebral column connections. Syndesmoses of the spine: their characteristics and structure. Synchrondroses of the spine: their characteristics and structure. Spinal joints: middle atlanto-axial joint, lateral atlanto-axial joint, arcuate joints, lumbosacral joint, sacrococcygeal joint: their structure. The vertebral column as a whole. Thoracic joints: syndesmoses, synchrondrosis and joints (costo-vertebral joints, costo-transverse joints, sterno-costal joints): their characteristics and structure. Thorax as a whole, its structure. Cranial connections: classification. Cranial syndesmoses: sutures, their types and characteristics. Skull synchrondroses: their types, characteristics, age-related features. Cranial joints: temporomandibular joint and atlanto-occipital joint: their structure. X-ray anatomy of the temporomandibular joint. Age-related features of the cranial joints: fontanelles, their structure, terms of ossification.	3K1-15 IIPH17,1 8,19	Assoc Prof Borys R.I., Assoc Prof Kyryk K.A., Assoc Prof Besedina A.S., Assoc Prof Bekesevych A.M. Assist Prof Sodomora O.O., Assist Prof Mykhalevych M.M., Assist Prof Logash M.V., Assist Prof Hnidyk I.V., Assist Prof Gres'ko N.I.
P-10	Bones connection of the upper extremity.	Upper limb joints. Upper limb girdle joints: syndesmoses and joints of the upper limb girdle and the upper limb (supraclavicular-clavicular joint and sternoclavicular joint), their structure. Free upper limb joints: shoulder joint, elbow joint, forearm bones' connection, radial wrist joint, wrist joints.	3K1-15 IIPH17,1 8,19	
P-11	Bones connection of the	Lower limb connections. Pelvic girdle joints:	3K1-15	

	<p>lower extremity.</p> <p>Practical skills on joints anatomy. Summary 2 "Arthrology".</p>	<p>syndesmoses, pubic symphysis, sacroiliac joint. Pelvis as a whole: its structure, basic measurements. Age, gender, individual features of the pelvis. Free lower limb joints: hip joint, knee joint, ankle joint, foot joints. The arch of the foot. X-ray anatomy of the joints of the bones of the upper and lower extremities. Influence of sports, work, social factors and environmental factors on the structure of the joints of the upper and lower extremities. Classification of connections between bones. Types of synarthroses. Diarthroses. Classification of spinal joints. Synchondroses, synchondroses of the spine: their characteristics and structure. Spinal joints. The vertebral column as a whole. Thorax connections. Skull connection: classification. Cranial syndesmoses: sutures, their types and characteristics. Cranial synchondroses: their types, characteristics, age-related features. Cranial joints. Upper limb connections. Upper limb girdle joints: syndesmoses of the upper limb girdle and upper limb girdle joints. Joints of the free upper limb, joints of the forearm bones, joints of the hand. Lower limb connections. Pelvic girdle joints: syndesmosis, pubic symphysis, sacroiliac joint. Pelvis as a whole. Free lower limb joints. Foot arch.</p>	<p><i>ППН17,1</i> <i>8,19</i></p>	
P-12	Muscles and fascia of the back.	<p>Muscle as an organ - definition. Tendons, aponeuroses. Auxiliary muscles: fascia, synovial vagina, synovial bursae, sesamoid bones, tendon arch, muscle block. Anatomical and physiological diameters of muscles: basic data on muscle strength and function; the concept of levers. Origin and insertion of muscles: their functional characteristics. Muscle classification: by development, topography, shape, size, direction of muscle fibers, function, etc. Muscle development in ontogenesis. Origins of development of muscles of the torso, head, neck, upper and lower extremities. Back muscles: superficial and deep, their characteristics. Thoracolumbar fascia.</p>	<p><i>3К1-15</i> <i>ППН17,1</i> <i>8,19</i></p>	
P-13	Abdominal muscles and fascia. The vagina of the rectus abdominis. Inguinal canal. White line of the abdomen	<p>Classification of torso muscles by topography, development and shape. Segmental structure of torso muscles. Chest muscles: superficial and deep, their characteristics. Thoracic fascia, intrathoracic fascia. Aperture definition. Parts of the diaphragm, foramina, their contents, triangles. Abdominal muscles: muscles of the anterior, lateral and posterior walls of the abdomen, their characteristics. Abdominal fascia. White line. Umbilical ring. Inguinal canal. The vagina of the rectus abdominis.</p>	<p><i>3К1-15</i> <i>ППН17,1</i> <i>8,19</i></p>	
P-14	Muscles and fascia of the head.	<p>Muscles of the head: classification. Masticatory muscles, their characteristics. Expression muscles, their difference from other skeletal muscles. Classification of expression muscles, their characteristics. Fascia of the head.</p>	<p><i>3К1-15</i> <i>ППН17,1</i> <i>8,19</i></p>	
P-15	Muscles and fascia of the neck. Topography of the	<p>Neck muscles: classification. Superficial, middle and deep neck muscles, their characteristics. Fascia of the neck: anatomical</p>	<p><i>3К1-15</i> <i>ППН17,1</i> <i>8,19</i></p>	

	neck.	classification and topographic classifications. Topography of the neck: areas, triangles, spaces.		
P-16	Upper limb muscles.	Upper limb muscles: classification. Upper limb girdle muscles, their characteristics. Shoulder muscles: classification, their characteristics. Forearm muscles: classification, their characteristics. Muscles of the hand: classification, their characteristics.	<i>3K1-15 ППН17,1 8,19</i>	
P-17	Lower limb muscles.	Lower limb muscles: classification. Lower limb girdle muscles: classification, their characteristics. Thigh muscles: classification, their characteristics. Shin muscles: classification, their characteristics. Foot muscles: classification, their characteristics.	<i>3K1-15 ППН17,1 8,19</i>	
P-18	Fascia and topography of the upper and lower extremities Practical skills on myology. Summary 3 "Myology".	Fascia of the upper limb. Axillary fossa, axillary cavity, its topography, triangles, quadrilateral and trilateral foramens. Humeromuscular canal. Grooves on the anterior surface of the upper arm. Cubital fossa. Grooves on the anterior surface of the forearm. Bone-fibrous canals, extensors and flexors retinaculum, Carpal tunnels, synovial sheaths of flexor tendons. Synovial bursae. Fascia of the lower extremity. Muscular and vascular lacunas, their topography and contents. Femoral triangle. Grooves on the anterior surface of the thigh. Adductor canal. Popliteal fossa. Tibial canals: tibial-popliteal canal, upper and lower musculoskeletal canals. Grooves of the foot. Hiatus saphenus. Femoral canal. Retinaculum. Synovial bursa and vaginas of the lower extremity muscles. Mechanisms that support the arch of the foot: passive (ligaments) and active (muscles). Muscle as an organ. Tendons, aponeuroses. Auxiliary muscles: fascia, synovial vagina, synovial bursa, sesamoid bones, tendon arch, aponeurosis. Anatomical and physiological diameters of muscles: basic data on muscle strength and function; the concept of levers. Origin and insertion of muscles: their functional characteristics. Age, sex and individual characteristics of skeletal muscles. Influence of sports, work, social factors and environmental factors on the structure of skeletal muscles, torso and limbs.	<i>3K1-15 ППН17,1 8,19</i>	
P-19	Introduction to splanchnology. Classification of internal organs. Anatomy of the oral cavity. Palate. Anatomy of the tongue. Anatomy of the salivary glands.	Classification of viscera: tubular and parenchymal. General plan of the structure of the wall of tubular organs: mucous membrane, muscular membrane, outer layer. Characteristics of each layer. Organ-specific features of the structure of mucous membrane depending on the function of the organ. Serous coverings: relations of organs to the peritoneum. General patterns of structure of parenchymal organs. Glands: their classification, general principles of structure, functions. Digestive system: organs, functions. Development of oral cavity and its organs. Development of pharynx, esophagus, stomach, small and large intestines. Development of liver and pancreas. Primary and secondary body cavities. Sources of development of serous coverings. Peritoneal development.	<i>3K1-15 ППН17,1 8,19</i>	

		Structural mechanisms of malformations of oral cavity and its organs. Anomalies and variants of development of pharynx, esophagus, stomach, small and large intestines, liver, pancreas. Oral cavity: its parts. The walls of the dorsum of mouth and oral cavity, their combination. Palate: hard palate, soft palate, their structure. Tonsils. Tongue: parts. Features of structure of mucous membrane, the muscles of the tongue. Salivary glands: classification, their development. Small salivary glands: classification, topography, structure. Large salivary glands: topography, characteristics, structure, classification.		
P-20	Anatomy of teeth. Somatognathic system.	Teeth. Parts of the tooth. Crown surfaces. Periodont, parodont. Gums. Permanent teeth: their formula, anatomical characteristics of each type of teeth. Timeline of eruption of permanent teeth. Deciduous teeth: formula, structural features, terms of eruption. X-ray anatomy of teeth. Bites. Teeth development. Anomalies and variants of teeth development.	<i>3K1-15 ИПН17,1 8,19</i>	
P-21	Anatomy of pharynx and esophagus. Anatomy of stomach. Areas of the anterior abdominal wall	Pharynx, its topography, parts, connections. fauces, its limits. Lymphatic (lymphoid) ring of pharynx. The structure of pharyngeal wall: mucous membrane, pharyngeal basal fascia, pharyngeal muscles, outer layer. Esophagus: topography, parts, wall structure. Narrowing of esophagus. X-ray anatomy of the esophagus. Stomach: topography, parts. The structure of stomach wall: features of structure of mucous membrane (relief, glands), muscular membrane and serous covering. X-ray and gastroscopic characteristics of the mucous membrane Relation of stomach to peritoneum. Stomach ligaments. Variants of stomach shape: anatomical (in a corpse) and radiological (in a living person). The shape of stomach depending on the types of body structure. Age-related features of topography and structure of stomach. Small intestine, its parts. Duodenum: parts, topography, variants of its shape and position. X-ray anatomy of the duodenum. Topography of the mesenteric part of the small intestine: jejunum and ileum. Structure of small intestine wall. Structure of mucosa: intestinal villi, glands, folds, lymph nodes (lymphoid tissue). Features of the structure of intestinal mucosa be region of small intestine. Structure of the muscular layer. Relation to peritoneum of each part of small intestine. Age-related features of small intestine structure. Colon: parts. The structure of colon wall: mucous membrane (glands, folds, lymphatic (lymphoid) nodules), muscular layer, serous layer. Relation to peritoneum of each part of colon. Cecum and appendix: topography, structural features. Variants of position of appendix and its projection on the anterior abdominal wall. Colon: parts, folds, their topography, features of mucous membrane and muscular membrane structure.	<i>3K1-15 ИПН17,1 8,19</i>	

		Relation to peritoneum. Rectum: parts, folds, topography. Gender-related features of topography of rectum. Features of structure of the mucous and muscular layers. Relation to peritoneum. Anal canal: topography, features of structure of the mucous and muscular layers. Sphincters. Age-related features of colon structure. X-ray anatomy of colon. The shape and position of colon in a living person.		
P-22	Anatomy of liver, gallbladder and pancreas. Practical skills on digestive system organs. Summary 4 "Splanchnology. Anatomy of the digestive system".	Liver. Topography. External structure: edges, surfaces and their relief. Connections of the liver. Position in respect of peritoneum. The internal structure of the liver: lobes, segments, small segments. The vessels of the liver. Liver function. Bile secretion. Gallbladder: topography, parts, wall structure, 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. Pancreas: parts, topography, structure, functions. Pancreatic ducts. Islets of Langerhans. Age features of the topography and structure of pancreas Peritoneum. Abdominal cavity and its contents. Peritoneum cavity and its contents. Parietal peritoneum, internal peritoneum: their characteristics. Options of the position of internal organs in respect of the peritoneum. Derivatives of the peritoneum: omentum, mesentery, ties, their structure and function. Derivatives of the peritoneum cavity: bursas (hepatic, pregastric, omental - their walls, connections), sinuses, channels, recesses, holes, impressions. Topography of the peritoneum in the pelvic cavity: characteristics. Topography of parietal peritoneum on the walls of the abdominal cavity. General plan of the structure of the wall tubular organs: mucous layer, muscular layer, outer layer. Characteristics of each shell. Digestive system: organs, functions. Oral cavity: its parts. combination. Palate: hard palate, soft palate, their structure. Tonsils. Tongue. Salivary glands. Teeth. Parts of a tooth. Gums. Pharynx, its topography, parts, connections. Fauces, its limits. Lymphatic (lymphoid) ring of pharynx. Esophagus. Stomach. Small intestine, its parts. Colon, its parts. Liver. Topography, structure. Gallbladder: topography, parts, wall structure, functions. Pancreas: topography, parts, wall structure, functions. Peritoneum. Abdominal cavity, its contents. Peritoneal cavity, its contents.	<i>3K1-15 ИПН17,1 8,19</i>	
P-23	Anatomy of the external nose, nasal cavity, larynx.	Respiratory system: organs, function. The upper and lower airways. Development of the respiratory system in phylo- and ontogenesis. Variations and abnormalities of the respiratory system. External nose: parts, structure. Nasal cavity: vestibule, nasal passages, paranasal sinuses. The functional parts of the nasal cavity. The	<i>3K1-15 ИПН17,1 8,19</i>	

		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, vestibular folds. Glottis. Mechanisms of phonation. X-ray anatomy of larynx, laryngoscopy. Age features of the larynx.		
P-24	Anatomy of the trachea, main bronchi, lungs. Pleura. Mediastinum.	Trachea: parts, topography, wall structure. The main bronchi: topography, wall structure. Bronchial tree. Age features of the trachea and main bronchi. Lungs: topography, external structure. Hilum of the lungs. Root of the lung and its components. Lobes, segments, small segments of the lung. Acinus. The circulatory system of the lungs. X-ray anatomy of the trachea, bronchus and lung. Age features of the lungs. Pleura. Parietal pleura and its topographic parts. Inside pleura. Pleural cavity: content, recesses, their functions. Projection of pleural sacs on the walls of the chest cavity. Mediastinum: definition, limits. The organs of the anterior mediastinum. Organs of posterior mediastinum.	<i>3K1-15 ППН17,1 8,19</i>	
P-25	Anatomy of the urinary organs (kidneys, ureters, urinary bladder, urethra).	Urinary system: organs, function. Development of the urinary system in phylo- and ontogenesis. Variations and abnormalities of the urinary system: kidneys, ureters, bladder and urethra. Kidney: topography of the right and left kidney. The outer structure of the kidney. Position of the kidney in respect of the peritoneum. Membrane of the kidney. Fixing apparatus of the kidney. Topography of the elements of the renal pedicles. 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, wall structure, function. X-ray anatomy of the kidney. Age features and structure of the kidneys. Ureter: parts, topography, structure of wall, function. Position in respect of peritoneum. Narrowing of the ureter. Bladder: form, external structure, parts. Features of topography in men and women. The structure of the wall of the bladder: structural features of the mucosa, muscle layer. Position in respect of peritoneum (depending on the functional state). Female urethra. Male urethra. X-ray anatomy of the urinary tract (ureters, bladder, urethra). Age features of the bladder.	<i>3K1-15 ППН17,1 8,19</i>	
P-26	Anatomy of the male genitals. Perineum.	Male reproductive system: organs, function. Classification of the male reproductive system. Internal male genitalia. External male genitalia. The development of the male reproductive system in phylo- and ontogenesis. Variations and abnormalities of the internal male genital organs: testicles,	<i>3K1-15 ППН17,1 8,19</i>	

		<p>epididymidis, vas deferens, seminal vesicles, prostate gland. Variations and abnormalities of the external male genitalia. Hermaphroditism.</p> <p>The internal male genitalia. Testis: topography, structure. Epididymidis. The process of the descendens testis. Membrane of testis. Ejaculatory ducts: parts, their topography, wall structure. Spermatic cord and its components. Seminal vesicles: topography, structure, functions. Ejaculatory duct. Prostate: topography, parts, structure, functions. Bulbourethral gland. Age features of internal male genitalia.</p> <p>External male genitalia. Scrotum. The penis, its structure. Male urethra: parts, their topography, wall structure</p>		
P-27	Anatomy of female genitals. Mammary gland.	<p>Female reproductive system: organs, function. Classification of the female reproductive system. Internal female genitalia. External female genitalia. The development of the female reproductive system in phylo- and ontogenesis. Variations and abnormalities of the internal female reproductive organs: ovaries, fallopian tubes, uterus, vagina. Variations and abnormalities of the external female genitalia development:</p> <p>Internal female genitalia. Ovary: topography, external structure, internal structure, ovary connections, position in respect of peritoneum, function. Cyclic changes in the structure of the ovary. Age-related structural features of the ovary. Fallopian tube: topography, parts, walls structure, position in respect of peritoneum, function. Uterus: topography, shape, parts, wall structure. Connections of the uterus, position in respect of peritoneum, function. Age-related structural features of uterine and options for its position. Vagina: vault, wall structure. X-ray anatomy of internal female genitalia.</p> <p>External female genitalia. Female pudendum: mons pubis, large pudendal lips, small pudendal lips, vulvar vestibule, vestibular bulb, large vestibular glands, small vestibular glands. Clitoris. Female urethra. Perineum: definition, topography. Urogenital diaphragm: boundaries, muscles, fascia, sex differences. Pelvic diaphragm: limits, muscle, fascia. Ischiorectal fossa: limits, content.</p>	3K1-15 IIPH17,1 8,19	
P-28	<p>Anatomy of the immune and endocrine systems.</p> <p>Practical skills on visceral organs of the body.</p> <p>Summary 5. "Anatomy of the respiratory, genitourinary, endocrine and immune systems."</p>	<p>Immune system: functions. Classification of immune (lymphatic or lymphoid) system by function. The central organs of the immune system (primary lymphoid or lymph organs): bone marrow, thymus - structural patterns of their functions. Peripheral organs of the immune system (secondary lymph or lymphoid organs): structural patterns of their functions.</p> <p>The development of the immune system in embryogenesis. Central immune system (primary lymphoid or lymph organs). Red bone marrow. Yellow bone marrow. Topography, structure, functions. Age features of the bone marrow. Thymus: topography,</p>	3K1-15 IIPH17,1 8,19	

		<p>structure, functions. Age features of the thymus. Peripheral organs of the immune system (secondary lymph or lymphoid organs). Spleen: topography, structure, functions. Lymphatic (lymphoid) ring of the throat: tonsils that form it, their topography, structure, functions. Lymph nodes: classification, structure, function. Solitary 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.</p> <p>General principles of the structure of endocrine organs. Structural definition of "endocrine function". Structural mechanisms of hormone activity. Classification of endocrine organs. Development of endocrine organs in embryogenesis. Features of functional activity of endocrine organs during the prenatal period of human ontogenesis. Variations and malformations of endocrine organs.</p> <p>Thyroid gland: topography, structure, functions. Parathyroid gland: topography, structure, functions. Adrenal gland: structure, functions. Topography of the right and left adrenal glands. Endocrine part of the pancreas: structure, functions. Pituitary gland: topography, parts, structure, functions. Pineal gland: topography, structure, functions.</p> <p>External nose: parts, structure. Nasal cavity: vestibule, nasal passages, paranasal sinuses. The functional parts of the nasal cavity. The nasal part of the pharynx. Age features of the nasal cavity.</p> <p>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, vestibular folds. Glottis. Mechanisms of phonation. X-ray anatomy of larynx, laryngoscopy. Age features of the larynx. Trachea: parts, topography, wall structure. The main bronchi: topography, wall structure. Bronchial tree. Age features of the trachea and main bronchi.</p> <p>Lungs: topography, external structure. Hilum of the lungs. Root of the lung and its components. Lobes, segments, small segments of the lung. Acinus. The circulatory system of the lungs. X-ray anatomy of the trachea, bronchus and lung. Age features of the lungs.</p> <p>Pleura. Parietal pleura and its topographic parts. Inside pleura. Pleural cavity: content, recesses, their functions. Projection of pleural sacs on the walls of the chest cavity.</p> <p>Mediastinum: definition, limits. The organs of the anterior mediastinum. Organs of posterior mediastinum.</p> <p>Kidney: topography of the right and left kidney. Urinary tract. Male genitals: classification. Internal male genitals. External</p>		
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		<p>male genitals. Development of male genitals in ontogenesis. Female genitals: classification. Development of female genitals in ontogenesis. Variants and developmental anomalies of internal female genitals: ovaries, fallopian tubes, uterus, vagina. Variants and developmental anomalies of external female genitals. Immune system: functions. Classification of immune system organs by function. Development of immune system organs in embryogenesis. Central and peripheral organs of immune system (primary lymphatic or lymphoid organs). General principles of endocrine organs structure. Definition of "endocrine function". Structural mechanisms of realization of hormones action. Classification of endocrine organs. Development of endocrine organs in embryogenesis.</p>		
P-29	<p>Introduction to the CNS. General principles and structure of reflex arcs. Gray and white matter of the CNS. Development in onto- and phylogenesis. External and internal structure of the spinal cord.</p>	<p>The leading role of the nervous system in the body; its importance for the integration of organs, organ systems into a single body and in establishing relations with the environment. Classification of nervous system based on topographic principle (into central nervous system and peripheral nervous system) and anatomical and functional principle (somatic nervous system and autonomic nervous system). The general principle of neuron structure. Morphological and functional classification of neurons. Receptors and their classification. General plan of synapses. Reflex arc. Gray matter of the CNS. Neuroglia. Principles of spatial organization of gray matter of the CNS. Ganglia. White matter of the CNS. Nerve fibers, nerve bundles, roots.</p> <p>Stages of nervous system development in phylogenesis. Development of nervous system in ontogenesis. Development of spinal cord in embryogenesis. Brain development in embryogenesis: stages of three and five brain bubbles and their derivatives. Abnormalities of the spinal cord. Abnormalities of the brain. Topography of the spinal cord and its limits. External structure of the spinal cord (surface, sulcus, cords, thickening). Segmental structure of the spinal cord. Relationship between the vertebrae and spinal cord segments (Chipault rule). 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 funiculi of the spinal cord. Segmental apparatus of the spinal cord. The sensory node of spinal nerve. Anterior and posterior roots. Formation of spinal nerve trunk. Age-related structural features of the spinal cord.</p>	<p><i>3K1-15 IIPH17,1 8,19</i></p>	
P-30	<p>Embryogenesis of the brain. Anatomy of medulla oblongata and pons.</p>	<p>The brain. Parts of the brain: the great brain, cerebellum, brain stem. Classification of the brain departments by development. Derivatives of the rhomboid brain: medulla oblongata and hindbrain (pons and</p>	<p><i>3K1-15 IIPH17,1 8,19</i></p>	

		<p>cerebellum).</p> <p>Medulla oblongata: boundaries, external structure. Internal structure: gray and white matter.</p> <p>Pons: external structure. Internal structure: gray and white matter.</p>		
P-31	Cerebellar anatomy. IV ventricle. Rhomboid fossa.	<p>Cerebellum: topography, external structure. Internal structure: gray and white matter. Cerebral peduncle. Rhomboid fossa: formation, borders, relief. Projection of the nuclei of cranial nerves on the surface of rhomboid fossa. Fourth ventricle: wall, connection</p>	<p>3K1-15 <i>ППН17,1</i> 8,19</p>	
P-32	Anatomy of midbrain. Cerebral aqueduct. Anatomy of diencephalon.	<p>Midbrain and its parts. Roof plate: external structure; internal structure: gray and white matter. Brain peduncle, parts, internal structure: gray and white matter. Cerebral aqueduct. 12 pairs of cranial nerves of the brain. Diencephalon: parts (dorsal - thalamic brain, ventral part - the hypothalamus). Parts of the thalamic brain: the thalamus, epithalamus, metathalamus. Thalamus: external structure. Internal structure: nucleus and their functions. Epithalamus: parts. The pineal gland and its functions. Metathalamus: parts and their functions. Hypothalamus: its components. Pituitary. The nuclei of the hypothalamus, their function. Hypothalamic-pituitary system. The third ventricle: walls, connection.</p>	<p>3K1-15 <i>ППН17,1</i> 8,19</p>	
P-33	Cortex, its components and functions. Olfactory brain. Lateral ventricles.	<p>Cortex, its components and functions. Cyto- and myelo-architectonics of cortex. Works of V.O. Betz. Olfactory brain: parts, their constituents. Lateral ventricles. Their main parts, topography, walls and communications.</p>	<p>3K1-15 <i>ППН17,1</i> 8,19</p>	
P-34	The relief of the palium. Localization functions in the cortex of the cerebral hemispheres.	<p>Relief of the hemispheres: sulci and gyri. Morphological background of dynamic localization of functions in the cortex of the hemispheres.</p>	<p>3K1-15 <i>ППН17,1</i> 8,19</p>	
P-35	Basal nuclei. White matter of the hemispheres. Meninges of the brain and spinal cord. Cerebrospinal fluid formation and circulation. Exit of 12 pairs of cranial nerves from the brain and skull.	<p>White matter of the hemispheres: classification. Associative fiber: classification, functions. Commissural fibers and their functions. Corpus callosum, fornix, anterior commissure.</p> <p>Projection fibers: classification. Internal capsule: parts, pathways topography in each part. Age-related structural features 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 of dura mater of the brain, their topography. Sinuses of the dura mater of the brain. Intermeningeal spaces of the brain and spinal cord and their content. Formation and circulation of cerebrospinal fluid. Lateral ventricles: parts, walls, connection, circulation of cerebrospinal fluid. 12 pairs of cranial nerves and their running from the ventral and dorsal surfaces of brainstem.</p>	<p>3K1-15 <i>ППН17,1</i> 8,19</p>	
P-36	Ascending pathways.	<p>Pathways - definition. Anatomical and functional classification of the pathways of the central nervous system: associative pathways (short and long), commissural pathways,</p>	<p>3K1-15 <i>ППН17,1</i> 8,19</p>	

		projection pathways (ascending and descending). Ascending (afferent) pathways: exteroceptive, proprioceptive, interoceptive.		
P-37	Descending pathways.	Descending (efferent) pathways: pyramidal, extrapyramidal, cortical-bridge. Pyramidal motor system (centers, pathways). Extrapyramidal system (centers, pathways).	3K1-15 ППН17,1 8,19	
P-38	Practical skills on CNS anatomy. Summary 6 "Anatomy of the CNS".	External and internal structure of the spinal cord. Medulla oblongata, pons: boundaries, external structure. Internal structure: gray and white matter. Cerebellum: topography, external structure. Internal structure: gray and white matter. The composition of cerebellar pedicles. The walls of the cavity of rhombencephalon, connections of the IV ventricle. Midbrain. Diencephalon. Olfactory brain: parts, their components. Morphological bases of dynamic localization of functions in the cortex of the cerebral hemispheres. Basal ganglia: topography, parts, functions. Meninges of the brain and spinal cord. Ascending (afferent) and descending (efferent) pathways.	3K1-15 ППН17,1 8,19	
P-39	Anatomy of the special sense organs. Anatomy of the eye. Pathway of the visual analyzer.	Anatomical and functional characteristics of the sensory system. Peripheral receptors, pathways and cortical centers of the analyzers, their functional unity. Phylo- and ontogenesis of the eye. Abnormalities and variants of the eye development. Topography, structure, functions. Eyeball. Eyeball membrane: fibrous, vascular, inner (retina) - their structure. Eyeball chambers: front, rear, their walls. Vitreous body, lens. Aqueous humor: the place of production, drainage. Accommodative apparatus of the eye. Additional structures of the eye: eyelids, eyebrows, conjunctiva, external muscles of the eyeball, eye socket fascia. Lacrimal apparatus and its components. Pathways of the visual analyzer. Pupillary reflex pathways	3K1-15 ППН17,1 8,19	
P-40	Anatomy of the ear. Pathways of hearing and balance.	Ear. Phylo- and ontogenesis. Abnormalities of the ear. Parts of the ear: external, middle and inner ear. External ear: parts and their structure. Middle ear: parts. Tympanic cavity: walls, content. Ossicles: their structure. Joints, ligaments, muscles of auditory ossicles. Connections of the tympanic cavity. Auditory tube: part and structure. Inner ear, parts and topography. Bony labyrinth: vestibule, semicircular canals, cochlea, their structure. Membranous labyrinth: vestibular labyrinth, semicircular ducts, cochlear duct, their structure. The mechanism of sound perception and sound pathways. Pathways of hearing and balance.	3K1-15 ППН17,1 8,19	
P-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.	3K1-15 ППН17,1 8,19	
P-42	Practical skills on special sense organs. Summary 7	Eyeball. The coverings of the eyeball: fibrous, vascular, internal (retina), their structure.	3K1-15 ППН17,1	

	"Special senses organs".	Chambers of the eyeball: anterior, posterior, their walls. Vitreous body, lens. Aqueous humour: 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	8,19	
P-43	Classification of cranial nerves. I, II, III, IV, VI, VIII cranial nerves	General characteristics of the cranial nerves. Common features and differences in the structure of the cranial and spinal nerves. Classification of cranial nerves by function (motor, sensory, mixed). Classification of cranial nerves by origin. The development of the cranial nerves connected with the sensory system (pair I, II, VIII), myotomes of the main somites (pairs III, IV, VI, XII), gill arches (pair V, VII, IX, X, XI). Differences in the structure of the cranial nerves, brain derivatives (pair I, II) on the rest of the cranial nerves. General plan of motor, sensory and mixed cranial nerves. General structure of the autonomic ganglia of the head: roots, branches. Anatomy of cranial nerves: the nucleus, their localization, output of the nerve from the brain, from the skull, nerve branches, the composition of their fibers, topography, areas of innervation. I, II pairs of cranial nerves – features of their anatomy. IV, VI pairs: their nucleus, output of the nerve from the brain, from the skull, areas of innervation. III pair of cranial nerves: nucleus, output of the nerve from the brain, from the skull, branches, composition of fibers, areas of innervations, connection with the vegetative nodes of the head (ciliary node). Anatomy of the VIII pair: sensitive nodes, topography.	3K1-15 ИПН17,1 8,19	
P-44	V cranial nerve	V pair of cranial nerves: intracranial part – nucleus, sensory node, sensory and motor roots. Branches of the V pair: composition of fibers, output from the skull, areas of innervation, connection with the autonomic nodes of the head. Connection of the trigeminal nerve branches with autonomic nodes of the head (ciliary, pterygopalatine, submandibular, oticum).	3K1-15 ИПН17,1 8,19	
P-45	VII, IX, X cranial nerves. Vegetative nodes of the head.	VII pair and intermediate nerve: nuclei, topography, branches, composition of fibers, areas of innervation. Connection of intermediate nerve branches with autonomic nodes of the head (pterygopalatine, submandibular). IX pair: nuclei, output of the nerve from the brain, from the skull, branches, composition of fibers, areas of innervation. Connection with autonomic nodes of the head (otic node). X pair: nuclei, sensitive and autonomic nodes, the output of the nerve from the brain, from the skull, branches, areas of	3K1-15 ИПН17,1 8,19	

		innervations.		
P-46	XI, XII cranial nerves. Spinal nerves. Formation of somatic nerve plexuses. Cervical plexus. Thoracic nerves.	XI pair: nucleus, output of the nerve from the brain, from the skull, areas of innervation. XII pair: nucleus, output of the nerve from the brain, from the skull, areas of innervation. Autonomic ganglia of the head (pterygopalatine, ciliary, submandibular, otic): their roots and branches, areas of innervations. General plan of somatic nerve plexus formation. Components of the peripheral nervous system: nerves, ganglia, nerve plexus, nerve endings. General plan of the nerve. Neurovascular bundles. Classification of nerves. Segmental peripheral nerves distribution. Ganglia: classification. General plan of sensitive nodes. Spinal nerve: formation, composition of fibers, branches; compliance with the segments of the spinal cord. 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 patterns in the formation of somatic nerve plexus. General patterns in anatomy of the anterior branches of thoracic nerves. Connection of spinal nerves with the autonomic nervous system. Cervical plexus: sources of formation, topography, branches, areas of innervations. Thoracic nerve: branches. Intercostal nerves: topography, composition of fibers, branches, areas of innervations.	<i>3K1-15 ППН17,1 8,19</i>	
P-47	Aorta. Aortic arch branches. Common and external carotid arteries.	General principles of the structure and function of the cardiovascular system. Vascular components of the cardiovascular system: arteries, veins, vessels of the hemomicrocirculatory bed. Lymphatic vessels, the principles of their structure, functions. Aorta, parts of the aorta. Aortic arch and its branches. Common carotid artery: topography, branches. Features of the right and left common carotid artery. External carotid artery: topography, classification of branches. The branches of the external carotid artery: topography, areas of blood supply.	<i>3K1-15 ППН17,1 8,19</i>	
P-48	Internal carotid artery and subclavian artery	The internal carotid artery: parts, their topography. The branches of the internal carotid artery: topography, areas of blood supply. Subclavian artery: parts, their topography. Features of the right and left subclavian artery. The branches of the subclavian artery: topography, areas of blood supply. Blood supply of the brain and spinal cord. Arterial circle of the brain. Intersystem arterial anastomoses in the region of the head and neck.	<i>3K1-15 ППН17,1 8,19</i>	
P-49	Veins of the head and neck	Internal jugular vein: formation, topography, classification of tributaries. Intracranial tributaries, extracranial tributary of internal jugular vein. Pterygoid plexus: topography, formation. Anastomosis between the intracranial and extracranial internal jugular vein and its	<i>3K1-15 ППН17,1 8,19</i>	

		<p>tributaries. External jugular vein: formation, topography, tributaries. Anterior jugular vein: formation, topography, tributaries. Jugular venous arch: topography, formation. Brachiocephalic vein: roots, topography, tributaries. Superior vena cava: roots, topography, tributaries</p>		
P-50	<p>Lymphatic nodes and vessels of head and neck.</p>	<p>Thoracic duct: roots, topography, tributaries, the confluence of the venous system. Right lymphatic duct: roots, topography, the confluence of the venous system.</p> <p>Jugular trunks: formation, topography, areas of lymph inflow, lymph ducts confluence. Lymph nodes of the head: classification, topography, areas of lymph inflow, lymph outflow path. The lymph nodes of the neck: classification, topography, areas of lymph inflow, lymph outflow path</p>	<p>3K1-15 IIPH17,1 8,19</p>	
P-51	<p>Practical skills on blood vessels and nerves of the head and neck.</p> <p>Vascularization and innervation organs of the head and neck. Summary 8 "Vessels and nerves of the head and neck".</p>	<p>Classification of cranial nerves by origin. Differences in the structure of cranial nerves derived from the brain (I, II pairs) from the rest of the cranial nerves. III, IV, VI pairs: their nuclei, the exit of nerves from the brain and skull, areas of innervation. Anatomy of the trigeminal nerve: nuclei, their location, nerve output from the brain, skull, trigeminal node, sensory and motor roots. V-pair branches: fiber composition, exit from the skull, areas of innervation, connections with the vegetative nodes of the head. VII pair of cranial nerves: nuclei, topography, branches, the composition of their fibers, areas of innervation. IX, X, XI, XII pair: nucleus, nerve exit from the brain, from the skull, areas of innervation. Vegetative nodes of the head (pterygopalatine, ciliary, mandibular, sublingual, ear). Formation of spinal nerves. Anterior and posterior roots. White and gray connecting branches. Formation of plexuses. Cervical plexus: muscle branches, skin branches, diaphragmatic nerve, areas of innervation. Thoracic nerves. Vascularization (arterial blood supply, venous and lymphatic outflow) and innervation of the head and neck: mucous membranes of the mouth, soft palate, tongue, upper and lower teeth, pharynx, palatine tonsils, parotid gland, pituitary gland, lower gland mucous membranes of the nasal cavity, pharynx, larynx, thyroid gland, eyeball, lacrimal gland, skeletal muscles of the eyeball, outer ear, middle ear, inner ear, cerebrum, cerebellum, brainstem, dura mater, masticatory muscles, facial muscles (facial) muscles, neck muscles, facial skin, temporomandibular joint.</p>	<p>3K1-15 IIPH17,1 8,19</p>	
P-52	<p>Anatomy of the heart (I): topography, chambers of the heart. Large and small circulation.</p>	<p>Introduction to the cardiovascular system. Anatomy of the heart. Topography of the heart. The shape, position of the heart. External structure of the heart. Chambers of the heart: their structure. Heart valves. The structure of the heart wall: endocardium, myocardium and epicardium. Conducting system of the heart. Arteries and veins of the heart. Core, its structure, core cavity, content sinus. Projection of the boundaries of the heart</p>	<p>3K1-15 IIPH17,1 8,19</p>	

		<p>and valves on the front wall of the chest cavity. Age-related anatomy of the heart. Systemic and pulmonary circulation. Fetal circulation.</p> <p>Development of the heart in the phylogeny. Stages of development of the heart in human embryogenesis. Variations and abnormalities of the heart development. Structural mechanisms of cardiac abnormalities.</p>		
P-53	Anatomy of the heart (II): wall structure, blood supply and innervation (conduction system) of the heart, pericardium.	<p>The structure of the cardiac wall: endocardium, myocardium and epicardium. Conducting system of the heart. Arteries and veins of the heart. Core, its structure, core cavity, content sinus. Projection of the boundaries of the heart and valves on the chest. Points for auscultation of the heart valves.</p>	<i>3K1-15 ИПН17,1 8,19</i>	
P-54	Thoracic and abdominal aorta. Pelvic arteries	<p>Anatomical classification of arteries (paracardiac, arterious trunks, extraorganic and intraorganic). Classification of arteries by wall structure. Types of arteries branching. The main patterns of arteries distribution in the human body. Arterial intersystem and intersystem anastomoses. Sources and mechanisms of arteries development. Arterial arches and their derivatives. Variations and abnormalities of the trunk arteries development. Works of M.A.Tykhomyrov. Vessels of the hemomicrocirculatory bed, structure and function of their walls. Sources and mechanisms of hemomicrocirculatory bed vessels development. Works of the Department of Anatomy of O.O. Bohomolets NMU. Organ specificity of hemomicrocirculatory bed vessels. The concept of paths of collateral (bypass) flow of blood. Age features of arteries. X-ray anatomy of the arteries.</p> <p>Aorta and its parts. Thoracic aorta: topography, classification of branches. The branches of the thoracic aorta and areas of blood supply. Internal thoracic artery (branch of the subclavian artery): topography, branches, areas of blood supply. Intrasystem and intersystem arterial anastomoses.</p> <p>The abdominal aorta: topography, classification of branches. Parietal branches of the abdominal aorta: topography, areas of blood supply. Visceral branches of the abdominal aorta: unpaired and paired ones. Paired visceral branches of the abdominal aorta: topography and areas of blood supply. Unpaired visceral branches of the abdominal aorta: topography and areas of blood supply. Intrasystem arterial anastomoses between the branches of the abdominal aorta.</p> <p>Common iliac artery: formation, topography, branches. Internal iliac artery: topography, classification of branches. Parietal and visceral branches of the internal iliac artery: topography, areas of blood supply, intersystem and intersystem arterial anastomoses.</p>	<i>3K1-15 ИПН17,1 8,19</i>	
P-55	Veins of the trunk: azygos and hemiazygos veins, inferior vena cava, pelvic	<p>Anatomical classification of veins (paracardiac, trunk, extraorgan and intraorgan). Classification of veins by the wall</p>	<i>3K1-15 ИПН17,1 8,19</i>	

	veins. Portal hepatic vein. Venous anastomoses	<p>structure. Roots and tributaries of veins. Superficial veins, deep veins. Venous grid, venous plexus. Sources and mechanisms of the trunk veins development. Variations and abnormalities of the trunk veins development. Works of M.A.Tykhomyrov. Age features of veins. X-ray anatomy of veins.</p> <p>Superior vena cava: roots, tributaries, topography. Azygos vein: formation, topography, classification of tributaries, areas of venous blood inflow.</p> <p>Hemiazygos vein: formation, topography, classification of tributaries, areas of venous blood inflow. Veins of the spinal column.</p> <p>Inferior vena cava: roots, topography, classification of tributaries. Parietal and visceral tributaries of the inferior vena cava, areas of venous blood inflow.</p> <p>Hepatic portal vein: roots, topography, tributaries. Superior mesenteric vein: topography, tributaries, area of venous blood inflow. Inferior mesenteric vein: topography, tributaries, area of venous blood inflow. Splenic vein: topography, tributaries, area of venous blood inflow. Branching of hepatic portal vein in the liver.</p> <p>Common iliac vein: roots, topography. Internal iliac vein: topography, tributaries. Venous plexus of the pelvic organs.</p> <p>Venous intersystem anastomoses. Venous intersystem anastomoses cava-caval anastomoses, porto-caval anastomoses and porto-cava-caval anastomoses.</p>		
P-56	Lymphatic vessels and nodes of the thoracic, abdominal and pelvic cavities.	<p>Classification of lymph vessels. Lymphatic capillaries: wall structure and function. Lymph postcapillaries: wall structure and function. Lymphatic vessels (extraorgan and intraorgan): 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. Development of lymphatic vessels in embryogenesis. Variants and abnormalities of lymph ducts development. Works of the Kyiv anatomical school. Age-related structural features of lymphatic vessels.</p> <p>Lymph nodes. Lymph nodes of the chest: classification. Ways outflow of lymph from the lungs, heart and esophagus. Lymph nodes of the abdomen: classification. Pelvic lymph nodes. Lymphatic vessels and regional lymph nodes of the stomach, small intestine, colon, liver, kidney, uterus, ovary. Superficial and deep lymph vessels of the upper extremity. Lymph nodes of the upper limb: classification. Ways of lymph outflow from the breast. Superficial and deep lymphatic vessels of the lower limbs. The lymph nodes of the lower limb: classification.</p>	<i>3K1-15 ПРП17,1 8,19</i>	
P-57	Autonomic part of the peripheral nervous system. Sympathetic and parasympathetic portions	General patterns of the structure and function of the autonomic peripheral nervous system (autonomic nervous system). Morphological differences in the structure of the somatic	<i>3K1-15 ПРП17,1 8,19</i>	

	<p>of the ANS. Vegetative plexuses.</p>	<p>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, innervations objects. 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 autonomic 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 of nodes, interstitial branches. White and gray connecting branches: formation, topography. The branches of the cervical sympathetic trunk nodes, their topography and areas of innervation. Sympathetic roots of autonomic nodes of the head. The branches of the thoracic sympathetic trunk nodes, their topography, areas of innervation. The branches of the lumbar sympathetic trunk nodes, their topography, areas of innervation. The branches of the sacral sympathetic trunk nodes, their topography, areas of innervation. Parasympathetic part of the autonomic nervous system. Cranial part: autonomic nodes of the head, their topography, roots, branches, areas of innervations. Pelvic part. Visceral plexus: cranio-cervical part, thoracic part, abdominal part, pelvic part. Cranial-cervical part of visceral plexus: common carotid plexus, internal carotid plexus, external carotid plexus, subclavian plexus - their formation, areas of innervation. Thoracic part of visceral plexus: thoracic aortic plexus, cardiac plexus, esophageal plexus, pulmonary plexus - their formation, areas of innervation. Abdominal part of visceral plexus: abdominal aortic plexus: its secondary plexus, their topography and components, areas of innervation. Sources of formation, composition of fibers of the abdominal aortic plexus. Pelvic part of visceral plexus: upper hypogastric plexus, splanchnic pelvic nerves, inferior hypogastric plexus. Inferior hypogastric plexus: its secondary plexus, their topography, areas of innervation. Sources of formation, composition of fibers of the inferior hypogastric plexus.</p>		
<p>P-58</p>	<p>Practical skills on heart anatomy, blood vessels and nerves of the trunk. Vascularization and innervation of the thoracic, abdominal and pelvic cavities. Summary 9 "Anatomy of the heart. Vessels and nerves of the</p>	<p>Vascularization (arterial blood supply, venous and lymphatic outflow) and innervation of the walls and organs of the chest cavity: anterior, posterior and lateral walls of the chest cavity, diaphragm, trachea, bronchi, lungs, pleura, heart, core, esophagus. Vascularization (arterial blood supply, venous and lymphatic outflow) and innervation of the walls and organs of the abdomen: anterior, posterior and lateral walls of the abdominal cavity, spinal cord, liver, gall bladder,</p>	<p>3K1-15 IIPH17,1 8,19</p>	

	trunk.	stomach, small intestine (duodenum, ileum and jejunum), colon, pancreas, kidneys, adrenal. Vascularization (arterial blood supply, venous and lymphatic outflow) and innervation of the walls and organs of the pelvic cavity: the walls of the pelvis, perineum, urinary bladder, urethra, ovaries, uterus, fallopian tubes, vagina, external female genitalia, testicles, vas deferens, seminal vesicles, prostate, external male genitalia.glands, spleen		
P-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. Rete articulare cubiti: sources of formation. Dorsal carpal network: topography, sources of formation, branches, areas of blood supply. Palmar carpal network: topography, sources of formation, areas of blood supply. The superficial palmar arch: topography, sources of formation, 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. Lymphatic nodes and vessels of the upper limb.	<i>3K1-15 ППН17,1 8,19</i>	
P-60	Spinal nerves. Brachial plexus.	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 part: beams of the brachial plexus. Long branches of the brachial plexus: formation, topography, areas of innervation. Projection of long branches of the brachial plexus to the skin. Topographic and anatomical relationship between nerves and blood vessels of the upper extremities.	<i>3K1-15 ППН17,1 8,19</i>	
P-61	Vessels of the lower extremity.	The arteries of the lower extremities. 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. Anterior tibial artery: topography, branches, areas of blood supply. Posterior tibial artery: topography, branches, areas of blood supply. Articular knee network: sources of formation. Lateral malleolar network: topography, sources of formation, areas of blood supply. Medial malleolar network: 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, branches, areas of blood supply. Arterial anastomoses of the lower limbs. The projection of the lower extremity arteries to the skin.	<i>3K1-15 ППН17,1 8,19</i>	

		The veins of the lower limb: classification. Superficial and deep veins of the lower limbs: their characteristics, patterns of topography and structure. Deep and superficial lymphatics of lower limb. Lymphatics nodes of lower limb and their classification.		
P-62	Lumbar plexus. Sacral plexus.	Lumbar plexus: sources of formation, topography, branches, areas of innervations. 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.	<i>3K1-15 IPPH17,1 8,19</i>	
P-63	Practical skills on vessels and nerves of extremities. Vascularization and innervation of the extremities. Summary 10 "Vessels and nerves of the extremities".	Vascularization (arterial blood supply and venous drainage) and innervation of the upper extremity joints: upper extremity joints, shoulder joint, elbow joint, wrist joint Vascularization (arterial blood supply, venous and lymphatic outflow) and the innervation of the muscles of the upper extremity: shoulder girdle muscles, shoulder muscles, forearm muscles, muscles of the hand. Vascularization (arterial blood supply and venous drainage) and innervation of the lower extremity joints: hip, knee, ankle joint. Vascularization (arterial blood supply, venous and lymphatic 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 (arterial blood supply, venous and lymphatic outflow) and innervation of back muscles, chest and abdomen muscles.	<i>3K1-15 IPPH17,1 8,19</i>	
S-W-1	The main development stages anatomy. History of Ukrainian development anatomical schools in the XX - XXI centuries. Lviv Anatomical School.	It is necessary to collect up-to-date information on the periods of ontogenesis and embryogenesis, provide the basic anatomical terms in Latin, English, that important for the training of a competent physician and is the foundation for assimilation medical terminology.	<i>3K1-15 IPPH17,1 8,19</i>	
S-W-2	Gender, age and individual-related features of the skull.	It is necessary to collect classical fundamental information about the chest and pelvis in general, to present the basic anatomical terms in Latin, English, which is important for the training of a competent doctor and is the foundation for mastering medical terminology.	<i>3K1-15 IPPH17,1 8,19</i>	
S-W-3	Chest and pelvis as general.	It is necessary to collect modern information about chest and pelvis as a whole, to present anatomical terms in Latin, English, which is important for the training of a competent doctor and is the foundation for learning medical terminology.	<i>3K1-15 IPPH17,1 8,19</i>	
S-W-4	Biomechanics of joints.	It is necessary to gather modern information about the biomechanics of human joints, their classification in terms of function and shape, to present the basic anatomical terms in Latin and English, which is important for training a competent doctor and is the foundation for learning medical terminology.	<i>3K1-15 IPPH17,1 8,19</i>	

S-W-5	Head interfascial spaces.	It is necessary to collect modern information about the interfascial spaces of the head. Sketch the main topographic formations of the neck, present the basic anatomical terms in Latin and English, which is important for the training of a competent doctor and is the foundation for mastering medical terminology.	3K1-15 ППН17,1 8,19	
S-W-6	Topography of the neck (schematically).	It is necessary to collect modern information about the structure of interfascial spaces of the neck, provide basic anatomical terms in Latin, English languages, which is important for the training of a competent physician and is the foundation for mastering medical terminology.	3K1-15 ППН17,1 8,19	
S-W-7	Teeth development. Variants and anomalies of development of deciduous and permanent teeth	It is necessary to generalize modern information about the development of teeth, variants and anomalies in the development of deciduous and permanent teeth, provide basic anatomical terms in Latin and English, which is important for training a competent doctor and is the foundation for learning medical terminology	3K1-15 ППН17,1 8,19	
S-W-8	Physiological bites and pathological bites (schematically).	It is necessary to generalize modern information about physiological bites and pathological bites, to schematically draw different variants of bites, to present the basic anatomical terms in Latin and English, which is important for training a competent doctor and is the foundation for learning medical terminology.	3K1-15 ППН17,1 8,19	
S-W-9	Dental formula of different age groups	It is necessary to write dental formulas of permanent and deciduous teeth, to present the basic anatomical terms in Latin and English, which is important for training a competent doctor and is the foundation for learning medical terminology.	3K1-15 ППН17,1 8,19	
S-W-10	Formation of peritoneum (schematically).	It is necessary to generalize modern information about the defects of the digestive and respiratory systems, to present the basic anatomical terms in Latin and English, which is important for the training of a competent doctor and is the foundation for mastering medical terminology.	3K1-15 ППН17,1 8,19	
S-W-11	Functional anatomy of the endocrine system.	It is necessary to draw a schematic representation of the structural and functional units of endocrine organs, to present the basic anatomical terms in Latin and English, which is important for the training of a competent physician and is the foundation for mastering medical terminology.	3K1-15 ППН17,1 8,19	
S-W-12	Schematic representation of structural and functional units of parenchymal organs.	It is necessary to generalize modern information about the structural units of parenchymatous organs, to draw the course of the peritoneum schematically, to present the basic anatomical terms in Latin, English, which is important for training a competent doctor and is the foundation for learning medical terminology.	3K1-15 ППН17,1 8,19	
S-W-13	X-ray anatomy of the viscera.	It is necessary to collect both classical fundamental and modern information about radiology research of internal organs, to provide the basic anatomical terms in Latin, Ukrainian, which is important for the training of a competent doctor and is the foundation for mastering medical terminology.	3K1-15 ППН17,1 8,19	

S-W-14	Cerebrospinal fluid circulation (schematically)	It is necessary to collect both classical fundamental, and modern data on cerebrospinal fluid circulation and to draw schematically, to provide the basic anatomical terms. in Latin, English, which is important for the training of a competent doctor and is the foundation for mastering medical terminology.	3K1-15 ППН17,1 8,19	
S-W-15	Associative, commissural and projection pathways (schematically).	It is necessary to collect both classical fundamental and modern information about associative, commissural and projection ways and to draw them schematically, to provide the basic anatomical terms. in Latin, English, which is important for the training of a competent doctor and is the foundation for mastering medical terminology.	3K1-15 ППН17,1 8,19	
S-W-16	12 cranial nerves exit from the brain and skull.	It is necessary to collect both classical fundamental, and modern data on an exit of 12 pairs of cranial nerves from a brain and a skull and to draw them schematically, to provide the basic anatomic terms. in Latin, English, which is important for the training of a competent doctor and is the foundation for mastering medical terminology.	3K1-15 ППН17,1 8,19	
S-W-17	Nuclei projection of III - XII cranial nerves (rhomboid fossa)	It is necessary to collect both classical fundamental and modern information about the projection of the nuclei of III - XII pairs of cranial nerves on a rhomboid fossa and draw them schematically, provide basic anatomical terms in Latin, English, which is important for training a competent doctor and is the foundation for mastering medical terminology.	3K1-15 ППН17,1 8,19	
S-W-18	Skin derivatives.	It is necessary to collect modern information about the structure and development of skin derivatives, to provide basic anatomical terms in Latin, English, which is important for the training of a competent doctor and is the foundation for mastering medical terminology.	3K1-15 ППН17,1 8,19	
S-W-19	Topography peculiarities external carotid artery - anterior group of branches. Divisions of maxillary artery.	It is necessary to collect modern information about the peculiarities of topography of the external carotid artery anterior group of branches. Divisions of maxillary artery, to provide basic anatomical terms in Latin, English, which is important for the training of a competent doctor and is the foundation for mastering medical terminology.	3K1-15 ППН17,1 8,19	
S-W-20	Circle of Willis.	It is necessary to collect both classical fundamental and modern information about the circle of Willis and draw it schematically, present the basic anatomical terms in Latin, English, which is important for the training of a competent doctor and is the foundation for learning medical terminology.	3K1-15 ППН17,1 8,19	
S-W-21	Lymph nodes of the head. Lymph outflow from the organs of neck.	It is necessary to collect both classical fundamental and modern information about the lymph nodes of the head and lymph outflow from the organs of the neck, to draw them schematically, to provide the basic anatomical terms in Latin, English, which is important for the training of a competent doctor and is the foundation for mastering medical terminology.	3K1-15 ППН17,1 8,19	
S-W-22	Pterygoid venous plexus.	It is necessary to collect both classical	3K1-15	

	Formation of the anterior and external jugular veins,	fundamental, and modern data on a pterygoid venous plexus, formation of the anterior and external jugular veins, to provide the basic anatomic terms in Latin, English, which is important for the training of a competent doctor and is the foundation for mastering medical terminology.	<i>ППН17,1</i> <i>8,19</i>	
S-W-23	Fetal circulation.	It is necessary to collect modern information about the organization of fetal blood circulation, stages of development and abnormalities of heart development, provide basic anatomical terms in Latin, English, which is important for training a competent doctor and is the foundation for learning medical terminology.	<i>3К1-15</i> <i>ППН17,1</i> <i>8,19</i>	
S-W-24	Intersystemic and intrasystemic arterioarterial anastomoses.	It is necessary to collect modern information about the organization of human blood circulation, the peculiarities of the branching of the main arterial trunks to their main branches and the formation of intersystem and intrasystem anastomoses between them, to present the basic anatomical terms in Latin, English, which is important for the training of a competent physician and is the foundation for the assimilation of medical terminology.	<i>3К1-15</i> <i>ППН17,1</i> <i>8,19</i>	
S-W-25	Porto-caval and cava-caval anastomoses.	It is necessary to collect both classical fundamental and modern information about porto-caval and cava-caval anastomoses, to submit basic anatomical terms in Latin and Ukrainian, which is important for training a competent doctor and is the foundation for mastering medical terminology.	<i>3К1-15</i> <i>ППН17,1</i> <i>8,19</i>	
S-W-26	Formation of the right lymphatic and thoracic ducts.	It is necessary to collect both classical fundamental and modern information about formation of thoracic and right lymphatic ducts, to submit basic anatomical terms in Latin and Ukrainian, which is important for training a competent doctor and is the foundation for mastering medical terminology.	<i>3К1-15</i> <i>ППН17,1</i> <i>8,19</i>	
S-W-27	Arterial nets of the upper and lower extremities	It is necessary to collect both classical fundamental and modern information about arterial networks of the upper and lower extremities, to present the basic anatomical terms in Latin, English, which is important for the training of a competent doctor and is the foundation for mastering medical terminology.	<i>3К1-15</i> <i>ППН17,1</i> <i>8,19</i>	
S-W-28	Upper and lower extremities sensory areas and motor innervation by somatic plexuses.	It is necessary to collect both classical fundamental and modern information about the areas of sensory and motor innervation of the upper and lower extremities by somatic plexuses, provide basic anatomical terms in Latin and English, which is important for training a competent doctor and is the foundation for learning medical terminology.	<i>3К1-15</i> <i>ППН17,1</i> <i>8,19</i>	

8. Verification of learning outcomes

On-going control is performed during the training sessions and aims at checking mastering educational material. The forms of the current control during the classes are tests and oral questioning. The forms for evaluating of current educational activity are standardized and include control of theoretical and practical training. The final assessment for current educational activity is made for the 4-point scale (traditional) scale.

Learning outcome code	Learning outcome code	Learning outcome code	Learning outcome code
K-1-17, S-1-29, K-1-15,	K-1-17, S-1-29, K-1-15,	K-1-17, S-1-29, K-1-15, AR-1-11	K-1-17, S-1-29, K-1-15,

AR-1-11	AR-1-11	AR-1-11
General evaluation system		
Evaluating scales	Traditional 4-point scale, multi-point (200-point) scale, ECTS rating scale The student attended all practical (laboratory, seminar) classes and received at least 120 points for current performance	
Conditions of admission to the final control	The student attended all practical (laboratory, seminar) classes and received at least 120 points for current performance	
General evaluation system	Participation in work during the semester / exam – 60%/40% on a 200-point scale	
Type of final control	Methods of conducting of final control	Enrollment criteria
Credit	All topics submitted for current control should be passed. Grades from the 4-point scale are converted into points of a multi-point (200-point) scale in accordance with the Regulation “Criteria, rules and procedures for evaluating the results of students educational activities”.	The maximum number of points – 200 points The minimum number of points – 120 points
Evaluation criteria of exam/credit		
Exam	The exam is conducted only in written form and consists of two parts: 1. Test control of knowledge. The student receives a version of test task, which includes 40 test tasks from the database Step-1 (2006-2018 years) and contains test tasks from all studied sections of the discipline. The test database is opened throughout the training. 2. Written work. The student receives a variant with 4 questions to which he provides a written answer. The list of questions for exam is opened throughout the study.	1. Each correct test answer is counted as 1 point. The maximum possible number of points obtained for test control is 40 points. 2. Each written question is evaluated from 0 to 10 points. The maximum possible number of points obtained for written work is 40 points. The minimum number of points for exam is 50 points.
<p>The maximum number of points that a student can collect for current educational activity per semester for admission to exam is 120 points.</p> <p>The minimum number of points that a student must collect for current educational activity per semester for admission to exam is 72 points.</p> <p>Calculating the number of points is based on student evaluations received by traditional scale while learning subject, by calculating the arithmetic average (AA), rounded to two decimal places. The resulting value is converted into points by multipoint scale as follows:</p> $x = \frac{CA \times 120}{5}$		
Criteria for assessing an objective structured practical (clinical) exam/ Complex of practice-oriented exam Master’s thesis		
<p>Excellent ("5") - the student has deeply mastered program material, right, clearly, logically and completely answer it. In answer closely connects theory with practice, is fluent in practical skills, solves test problems and situational tasks of increased complexity, is well acquainted with the basic literature and research methods; shows the ability to apply knowledge of the material within his answers.</p> <p>Good ("4") – the student firmly knows the program material, completely and in fact answers it; does not make significant mistakes in answering questions; correctly applies theoretical positions in solving practical problems, has the necessary skills and techniques for their implementation; is able to solve easy and medium test problems and situational tasks</p> <p>Satisfactory ("3") - the student knows only the basic material, but has not mastered its details, mistakes are made, not enough correct formulation, violation of the sequence in the presentation of the program material. The student can solve only the easiest problems, knows only a mandatory minimum of research methods, is not sufficiently oriented in matters of methodology.</p>		

Unsatisfactory ("2") - the student does not know a significant part of the program material, makes significant mistakes, not confidently and with great difficulties performs practical work.

9. Course policy

Prevention of manifestations of academic dishonesty (plagiarism), dissemination of information about the rules of correct citation when writing a scientific text.

10. List of educational materials

1. Cherkasov V. G., Kravchuk S. Yu., Mateshuk-Vatseba L. R. Human anatomy/Vinnytsia: Nova knyha, 2020 – 604 p.
2. Mateshuk-Vatseba L. R., Herasymiuk I. Ye., Kryvetskyi V. V., Popadynets O. H., Frank H. Netter Atlas of Human Anatomy
Переклад 7-го англ. вид.: двомовне вид. К.: ВСВ «Медицина». – 2020. – 736 с.
3. Зіменковський Б. С., Матешук-Вацеба Л. Р., Підвальна У. С., Кордис Б. Д. Анатомічний музей Львівського національного медичного університету імені Данила Галицького: чотиримовне вид. Львів: Медицина світу. – 2020. – 136 с.
4. Human Anatomy in three volumes A.S. Holovatskyi, V.H. Cherkasova, M.R.Sapin, Ya.I. Fedonyuk / Vinnytsia: Nova knyha, 2006,2007,2008.
5. Svyrydov O.I Human Anatomy. - Kyiv: Vyshcha shkola, 2000.- 399p.
6. Prives M.G., Lysenkov N.K., Bushkevych V.I. Human Anatomy- Hypokrat, St. Petersburg: St. Petersburg house SPb MAPE, 2004 -720p.
7. Human Anatomy ed. By Sapin M.R./ Moscow: Medicine, 1996, vol.I, vol.II.
8. Siņelʹnikov R.D. Atlas of Human Anatomy. - Moscow: Medicine, 2004, vol.I, vol.II,vol.III, vol. IV.
9. The international anatomical nomenclature / edited by Bobryk I.I., Koveshnikova V.H.- Kyiv: Health 2001 – 328p.

11. Equipment, logistics and software of the discipline

Preparations and models of bones, joints, muscle models, wet preparations of internal organs, museum wet and mummified preparations of internal organs, models of internal organs, wet preparations of brain, models of brain, wet and museum wet and mummified preparations of heart, models of heart, museum mummified preparations and models of neuro-vascular bundles of head, neck, thoracic, abdominal and pelvic cavities and limbs, computer class, multimedia projector, smart TV, educational films, tables for all topics of lectures and practical classes, methodical recommendations for practical classes and for self-works, all information is presented on MISA system, software for testing for each practical lesson, summary lesson and exam.

Responsible for the educational process at the department – assoc. prof. Vilkhova I.V.

The department has a student research group. Responsible for student scientific work – assoc. prof. Mota O. M.

Lesson route: before the beginning of the class it is necessary to prepare preparations according to the topic of the class, a test control is on each lesson (software), oral examination with verification of practical skills (ability to show the structures on preparations), teachers explanation of the material, self-work of students with preparations.

According to the requirements of labor protection, only students in medical coats and caps can be present during the class, it is desirable to have disposable non-sterile gloves, forceptss.

Classes are held in museum and dissection rooms of the Normal Anatomy Department.

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