Ministry of Public Health of Ukraine
Poltava State Medical University

The Department of Human Anatomy

SYLLABUS

HUMAN ANATOMY

Compulsory discipline

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academic and professional level	the second (master's) level of higher education
field of knowledge	22 «Healthcare»
specialty	221 «Dentistry»
academic qualification	Master of Dentistry
professional qualification	Dentist
academic and professional program	«Dentistry» full-time
mode of study	
course(s) and semester(s) of study of the discipline	1 course 1 - 2 semesters

Poltava – 2024

INFORMATION ABOUT LECTURERS WHO DELIVER THE ACADEMIC DISCIPLINE

Surname, name, patronymic of the lecturer (lecturers), scientific degree, academic title	Svintsytska Nataliia Leonidivna – Candidate of Medical Sciences, Associate Professor Hryn Volodymyr Hryhorovych – Head of the Department, Doctor of Medical Sciences, Professor Piliuhin Andriy Valentynovych – Candidate of Medical Sciences, Associate Professor Ustenko Roman Leonidovych – Candidate of Medical Sciences, Associate Professor Katsenko Andriy Lyuboslavovych – Lecturer Lytovka Volodymyr Viktorovych – Lecturer
Profile of the lecturer (lecturers)	https://anatomy.pdmu.edu.ua
Contact phone	609611
E-mail:	anatomy@umsa.edu.ua
Department page at the website of PSMU	https://anatomy.pdmu.edu.ua

MAIN CHARACTERISTICS OF THE ACADEMIC DISCIPLINE

The scope of the academic discipline (module)

Number of credits / hours – 11.0/330.0, of which:
Lectures (hours) – 44
Practical classes (hours) – 132
Self-directed work (hours) – 154
Type of control - semester final certification (exam)

The policy of the academic discipline

General principles on which the policy of studying Human Anatomy is based: compliance with the principles of academic integrity by the subjects of the educational process (students and academic staff) of the principles of academic integrity, which include the rejection of cheating in any form, objective assessment of learning outcomes, mandatory reference to sources of information sources, etc.; involvement of students in academic culture and scientific activity; formation of the level of theoretical knowledge, skills, practical skills, ways of thinking necessary for future professional activity; promotion of universal activities; popularisation of universal, national and professional values; acquaintance of students with the basics of medical ethics and deontology; promotion of a healthy lifestyle; creating conditions for the subjects of the educational process to maintain a positive image and business reputation of PSMU in the domestic and foreign educational and scientific space creating conditions for the personal development of students, realisation of their intellectual and cognitive abilities; formation of humanistic outlook, tolerance, and multiculturalism.

During practical classes and lectures on the subject "Human Anatomy" students must comply with the following obligations:

• be honest;

• respect the teachers, staff and students of the academy;

• be responsible for their actions and the consequences they lead to;

• attend all classes according to the schedule, if there is no documentary evidence of a valid reason for their absence;

• come to class on time and do not leave the classroom without the permission of the teacher;

• perform all academic tasks and work in a timely manner;

• actively prepare for classes and participate in work during classes, while giving other students the opportunity to contribute to the learning process;

• comply with the law, moral and ethical standards of conduct;

• acquire knowledge, practical skills, and professional skills;

• treat the department's property and teaching aids (wet, bony, etc.) carefully;

• adhere to sanitary and hygienic norms;

• timely inform the administration of the department about the circumstances that hinder the performance of duties by students or make them impossible;

• adhere to the academic uniform (white dressing, medical cap);

• It is strictly forbidden to use the telephone in the premises of the department for photography and video, without the permission of the staff of the department.

System of incentives: students - winners of the second stage of the All-Ukrainian student olympiad (international olympiads) in Human Anatomy at the request of the department to the dean's office receive additional points (20);

students - members of a research group who demonstrate high personal scientific achievements can apply for the highest score in the automatically receive the highest score for the SFC in Human Anatomy. Policy in the field of assessment of all types of academic achievements of students is based on the principles of transparency, objectivity and openness.

The department is committed to student-centred learning, the practical implementation of the principles of individualisation and differentiation in education, as well as the eradication of any manifestations of subjectivity and bias in assessment.

When organizing the educational process at PSMU, lecturers and students act in accordance with:

- Regulation on the organization of the educational process at Poltava State Medical University
- Regulation on the academic integrity of recipients of higher education and employees of Poltava State Medical University
- Regulation on the organization and methods for assessment of educational activities of higher education recipients at Poltava State Medical University
- Regulation on the organization of self-directed work of students at Poltava State Medical University
- Regulation on retaking missed classes and making up unsatisfactory grades by the recipients of higher education at Poltava State Medical University

- Regulation on the procedure of forming the individual educational trajectories for the recipients of higher education at Poltava State Medical University
- Regulation on the procedure of credit transfer for academic disciplines and calculation of academic difference
- Regulation on the appeal claim for the results of final control of academic performance for recipients of higher education
- Regulation on rating the recipients of higher education at Poltava State Medical University
- **You can get acquainted with these provisions on the PSMU website https://www.pdmu.edu.ua/n-process/viddilmonitorynguosvity/informaciyi-materiali-n-process-vimo-ek9k**

Description of the academic discipline (summary)

The subject of study of the discipline «Human Anatomy»: the science of shape, structure, origin and development of organs, systems and the human body as a whole. The study of the discipline «Human Anatomy» for dentists is a classic model of university course adapted to the needs of medicine, which provides each student with knowledge in the world of natural science ideas about the structure and function of the human body as a whole, the ability to use acquired knowledge in further study of other basic sciences medicine, and in the practice of the doctor. The staff of the Department of Human Anatomy of PSMU is represented by a highly qualified teaching staff. The staff of our department has strong traditions and rich experience of educational work among student youth. The specificity of the discipline «Human Anatomy» is the fact that full training is possible only with the use of macropreparations. That is why the real brilliant of the department is the museum of anatomical preparations! The Anatomical Museum is not only a collection of anatomical preparations, but also a place for practical classes. Recently, when there is very little opportunity to work with corpse material, to produce wet preparations, the museum, as never before, plays a major role in the educational process. This is the only place where a medical student has the opportunity to see the body in its natural state. Our museum is known not only within the walls of the academy, but also outside it. Pupils of the city, region and students of other higher and secondary educational institutions often come for sightseeing and thematic excursions, up to 30-40 excursions are held per year. It should also be noted that the demonstration of the effects of bad habits on the human body and future offspring encourages young people to think about their way of life. The museum is also focused on conducting classes for students-biologists of other universities. Our museum is also known abroad, in recent years we have been visited by citizens of Hungary, Australia, Israel, Italy, Germany, England, Canada, Iran, Jordan, and India, as evidenced by the positive reviews in the journal of visits.

Pre-requisites and post-requisites of the academic discipline (interdisciplinary links)

Pre-requisites. The study of Human Anatomy is based on the study of medical biology, histology, cytology and embryology, biophysics, Latin, ethics, philosophy, ecology and integrates with these disciplines.

Post-requisites The discipline «Human Anatomy» lays the foundations for students to study normal and pathological physiology, pathological anatomy, clinical anatomy and operative surgery, deontology, propaedeutic of clinical disciplines (propaedeutic of therapeutic dentistry, propaedeutic of surgical dentistry; pediatric; surgical dentistry; propaedeutic of internal medicine) and the formation of skills to apply knowledge of human anatomy in the process of further study of all clinical disciplines (therapeutic dentistry; surgical dentistry; orthopedic dentistry; orthodontics, etc.) and in future professional activities.

The aim and tasks of the academic discipline:

1.1. The purpose of teaching the discipline is the acquisition by each student of knowledge of anatomy in the world of natural science ideas about the structure and function of the human body as a whole, the ability to use the acquired knowledge in further study of other basic medical sciences and in practice.

1.2. The main tasks of studying the discipline «Human Anatomy» as a science is a systematic approach to describing the shape, structure of organs, position (topography) of body parts and organs in unity with the functions performed, taking into account age, gender and individual characteristics.

The main tasks of studying the discipline are:

-analyze information about the structure of the human body, its constituent systems, organs and tissues;

-determine the topographic and anatomical relationships of human organs and systems;

-interpret the patterns of prenatal and early postnatal development of human organs, variants of organ variability, malformations;

-interpret gender, age and individual features of the structure of the human body;

-predict the interdependence and unity of structures and functions of human organs, their variability under the influence of environmental factors;

-determine the impact of social conditions and labor on the development and structure of the human body;

-demonstrate mastery of moral and ethical principles of attitude to a living person and his body as an object of anatomical and clinical research.

Competences and learning outcomes in accordance with the academic and professional program, the formation of which is facilitated by the discipline (integral, general, special)

According to the requirements of the standard, the discipline provides students with the acquisition of competencies:

• integral:

-Ability to solve complex problems and problems in the field of health care in the specialty "Dentistry" in a professional activity or in the learning process, which involves research and / or innovation and is characterized by uncertainty of conditions and requirements.

• general:

- Ability to abstract thinking, analysis and synthesis.

-Knowledge and understanding of the subject area and understanding of professional activity.

- Ability to apply knowledge in practice.
- Ability to search, process and analyze information from various sources.
- Ability to identify, pose and solve problems.

• special (professional, subject):

- Ability to interpret the results of laboratory and instrumental research.
- Ability to diagnose: to determine the preliminary, clinical, final, concomitant diagnosis, emergencies.
- Ability to plan and implement measures for the prevention of diseases of organs and tissues of the oral cavity and maxillofacial region.
- Ability to design the process of providing medical care: to determine approaches, plan, types and principles of treatment of diseases of organs and tissues of the oral cavity and maxillofacial region.
- Ability to treat major diseases of organs and tissues of the oral cavity and maxillofacial region.
- Ability to assess the impact of the environment on the health of the population (individual, family, population).

Program learning outcomes which formation is promoted by discipline (EPP):

- collect information about the general condition of the patient, assess the psychomotor and physical development of the patient, the condition of the organs of the maxillofacial area, based on the results of laboratory and instrumental studies to assess information about the diagnosis;
- assign and analyze additional (mandatory and optional) methods of examination (laboratory, radiological, functional and / or instrumental) patients with diseases of organs and tissues of the oral cavity and maxillofacial region for differential diagnosis of diseases;
- plan and implement measures to prevent dental diseases among the population to prevent the spread of dental diseases;
- analyze the epidemiological situation and carry out measures of mass and individual, general and local drug and non-drug prevention of dental diseases;
- determine the approach, plan, type and principle of treatment of dental disease by making an informed decision according to existing algorithms and standard schemes;
- evaluate the impact of the environment on the health of the population in a medical institution by standard methods;
- organize the required level of individual safety (own and persons cared for) in the event of typical dangerous situations in the individual field of activity;
- perform medical manipulations on the basis of preliminary and / or final clinical diagnosis for different segments of the population and in different conditions;
- perform medical dental manipulations on the basis of preliminary and / or final clinical diagnosis for different segments of the population and in different conditions;
- perform manipulations of emergency medical care, using standard schemes, under any circumstances on the basis of a diagnosis of emergency in a limited time.

Learning outcomes for the discipline:

upon completion of the study students must:

know:

- the form and structure of the bodies integrated into the system;
- shape and structure of bones (systema skeletale);

- systema articulare;
- muscles (systema musculare);
- viscera (systema digestorium, respiratorium, urinarium, genitalia);
- central and peripheral nervous system (including the autonomic part of the peripheral nervous system (systema nervorum);
- endocrine organs (glandulae endocrinae);
- organs and structures of the immune system;
- lymphoid system (systema lymphoideum);
- sense organs (organa sensuum);
- integument (integumentum commune);
- cardiovascular system (systema cardiovasculare);
- topography of organs, vessels, nerves in different parts of the body, which has great importance for surgery;
- age and gender aspects of anatomical features of individual human development at different stages of ontogenesis;
- patterns of prenatal and early postnatal development of human organs, variants of organ variability, malformations.

be able:

- to demonstrate and describe the anatomical structure of organs, systems of human organs;
- to determine the topographic-anatomical relationships of organs and systems of human organs on anatomical preparations;
- be able to assess the age, sex and individual characteristics of the structure of human organs;
- be able to assess the impact of social conditions and labor on the development and structure of the human body;
- be able to use Latin anatomical terms and their Ukrainian equivalents in accordance with the requirements of the international anatomical nomenclature

(São Paulo, 1997; Kyiv, 2001).

Thematic plan of lectures (by modules), specifying the basic issues, which are considered at the lecture

Seq. No.	Title of the topic	Number of hours
1	**Anatomy as science. Subject and content of human anatomy. Research methods. Universal concept of anatomy.** 1.Human anatomy is the science about the form and the structure, origin and development of a human body, its organs and systems. 2.Main modern directions of development of anatomy are age anatomy, comparative anatomy, plastic anatomy, anthropology, ecological anatomy, etc. 3.Main research methods in anatomy are visual examination, anthropometrical researches, preparations, macromicroscopic researches. 4.Modern research methods in anatomy: X-Ray methods, computer tomography, magnetic resonance imaging (MRI), ultrasound , endoscopy, etc. 5.Anatomic terminology. 6.Axes and planes of a body of the person.	2
2	**General anatomy of the human skeleton (general osteology). Development and classification of bones. Bone as multifunctional organ.** 1.General information about a skeleton. Primary and secondary bones.	2

	Classification of bones. Bone as organ. 2.Compact and spongy bone substances, their structures. Chemical composition, physical and mechanical properties of the bone. Structure of a tubular bone: its parts. Features of the structure of the bone in children's, youthful, mature, elderly and senile age. Bones in x-ray the image. 3.Bones of an axial skeleton: vertebrae, sternum, ribs. 4.Bones of an additional skeleton: bones of the upper girdle and free upper extremity; bones of the lower girdle and free lower extremity.	
3	**Theoretical prerequisites to studying of types joints of bones. Classification movable and unmovable joints of the bones.** 1. Classifications of connections between bones. 2. Types of synarthrosis fibrous compounds (sindesmosis). 3. Cartilaginous joints (synchondrosis) - permanent, temporary, hyaline, fibrous, simfisis. 4. Diarthrosis (sinovial joints): definitions, main signs of a joint, their characteristic. Additional components of joints. 5. Classifications of joints: structure, a form of articulate surfaces, on function. The simple, difficult, complex and combined joints: their characteristic. Types of movements and their analysis (axes of movements, planes of movements).	2
4	**Morphofunctional anatomy of the skull.** 1. General characteristics of the skull. X-ray anatomy of the skull. 2. Neurocranium. The structure of the bones that make the neurocranium: frontal, occipital, parietal. Age and sex features of the skull structure. Variants and anomalies of skull bone development. 3. Bones of the facial skull. 4. Orbit, bone base of the nasal cavity, bone palate, paranasal sinuses, their connections. 5. Lateral norm of the skull: temporal, infratemporal, pterygopalatine fossa of the skull, their connections with topographic formations of the skull. 6. Vault of the skull, external and internal bases of the skull. Anterior, middle and posterior cranial fossae. 7. The skull as a whole. Conrforces of the skull. 8. Joints of skull bones: classification. 9. Syndesmosis of the skull: sutures, their types and characteristics. 10. Synchondrosis of the skull: their types, characteristics, age. 11. Skull joints: temporomandibular joint, structure. 12. Age features of the skull connection: fontanneles, their types, structure, terms of ossification. Sexual features of the skull. 13. Craniometry.	2
5	**Review of the structure of the muscular system. Muscles and topography of the head, neck.** 1. Muscle as an organ - definition. 2. Tendons, aponeuroses. Acssessory apparatus of the muscles. 3. Basic data on muscle strength and function; the concept of levers. 4. The origin and insertion of muscles: their functional characteristics. 5. Classification of the muscles: by development, topography, shape, size, direction of muscle fibers, function, etc. 6. Sources of development of muscles of the trunk, head, neck, upper and lower extremities. 7. Classification of head muscles. Muscles of the head, mimic muscles. Masticatory muscles. 8. Osseo-fascial spaces of the head. 9. Muscles of the neck: classification. 10. Superficial, middle and deep muscles of the neck, their characteristics.	2

	11. Fascia of the neck: anatomical classification and anatomical and topographic classification. 12. Topography of the neck: areas, triangles, spaces. Clinical significance.	
6	**Introduction to splanchnology. Theoretical prerequisites to studying of the human digestive system.** 1. General plan of the structure of the wall of the tubular organs: mucous membrane, muscular membrane, outer shell. 2. Organ-specific features of the structure of the mucous membrane depending on the function of the organ. 3. Serous membrane: options for the relationship of organs to the peritoneum. 4. General patterns of structure of parenchymal organs. 5. Glands: their classification, general principles of structure, functions. 6. Digestive system: organs, functions. 7. Development of the digestive tract. 8. Pharynx, its topography, parts, connections. Esophagus: topography, parts, wall structure. Constrictions of the esophagus. Stomach: topography, parts of the stomach. 9. Small intestine, its parts. The structure of the wall of the small intestine. Age features of the structure of the small intestine. 10. Large intestine: parts. The structure of the wall of the large intestine. Macroscopic differences in the structure of the small and large intestine. Age features of the structure of the colon. 11. Liver. Topography, structure.Ligaments. of the liver Relation to the peritoneum. Liver function. 12. Pancreas: parts, topography, structure, functions. 13. Peritoneum. Abdominal cavity, its contents. Peritoneal cavity, its contents. 14. Anomalies and options for the development of the digestive tract.	2
7	**Oral cavity. Dental system.** 1. Development of the oral cavity and its derivatives. 2. Oral cavity: its parts. The walls of the vestibule of the oral cavity and the oral cavity proper, their connections. 3. Palate: hard palate, soft palate, their structure. 4. Tongue: parts. Features of the structure of the mucous membrane, the muscles of the tongue. 5. Salivary glands: classification, their development. Small salivary glands: classification, topography, structure. Large salivary glands: topography, characteristics, structure, classification. 6. Teeth. Development of teeth. Parts of a tooth. Crown surfaces. General structure of teeth. 7. Periodont, paradont. Gums. 8. Permanent teeth: their formula, characteristics of each type of teeth. Terms of eruption of permanent teeth. 9. Decidous teeth: formula, structure features, terms of eruption. 10. X-ray anatomy of teeth. Bites. 11. The concept of occlusion, types of occlusion. Physiological and pathological bites. 12. Anomalies and variants of tooth development.	2
8	**Theoretical prerequisites to studying of the Respiratory system. Clinical aspects.** 1. Respiratory system: organs, functions. 2. Upper and lower respiratory tract. Variants and anomalies of the development of the respiratory system. 3. External nose: parts, structure. Nasal cavity: vestibule, nasal meatusses, paranasal sinuses. Functional parts of the nasal cavity. Nasal part of the	2

	pharynx. Age features of the nasal cavity. 4. Larynx. Topography. The structure of the larynx. Age features of the larynx. 5. Trachea: parts, topography, wall structure. 6. Main bronchi: topography, wall structure. Bronchial tree. Age features of the trachea and main bronchi. 7. Lungs: topography, structure. Particles, segments, lobes of the lung. Acinus. Age features of the lungs. 8. Pleura. Parietal pleura and its topographic parts. Internal pleura. Pleural cavity: contents, resessus, their functional value. 9. Mediastinum: definitions, boundaries. 10. X-ray anatomy of the respiratory system.	
9	**Theoretical prerequisites to studying of the Urinary system. Structure, developmental anomalies. Clinical aspects.** 1. Urinary system: organs, functions. 2. Variants and anomalies in the development of the urinary system: kidneys, ureters, urinary bladder and urethra. 3. Kidney: topography of the right and left kidney. 4. The external structure of the kidney. The relation of the kidney to the peritoneum. Kidney shells. Fixing apparatus of the kidney. Topography of the elements of the renal peduncle. 5. Internal structure of the kidney. Kidney segments. The nephron is a structural and functional unit of the kidney. The structure of the circulatory system of the kidney. 6. Urinary tract. Minor renal calyces, major renal calyces, renal pelvis, wall structure, functions. 7. X-ray anatomy of the kidney. 8. Age features of topography and structure of a kidney. 9. Ureter: parts, topography, wall structure, function. Relation to the peritoneum. Constrictions of the ureter. 10. Urinary bladder: shape, external structure, parts. 11. Features of topography in men and women. 12. The structure of the urinary bladder wall: features of the structure of the mucous membrane, muscular membrane. 13. Relation to the peritoneum (depending on the functional state). 14. Urethra. Sexual features. Clinical significance.	2
10	**Theoretical prerequisites to studying of the Reproductive system. Structure, developmental anomalies. Clinical aspects.** 1. Development of the reproductive system. 2. Male reproductive system: organs, functions. 3. Classification of the male reproductive system. Internal male genitalia. Variants and anomalies in the development of the internal male genitalia: testicles, epidermis, vas deferens, seminal vesicle, prostate. 4. Age features of internal male genitalia. 5. External male genitalia. Developmental anomalies. 6. Female reproductive system: organs, functions. 7. Classification of the female reproductive system. Internal female genitalia. Variants and anomalies of development of internal female genitalia: ovaries, fallopian tubes, uterus, vagina. 8. Uterus: topography, shape, parts, wall structure. Age features of the structure of the uterus and variants of its position. 9. External female genitalia, defects and anomalies of development. 10. Perineum.	2
11	**Theoretical prerequisites to studying of the Endocrine system. Clinical aspects.**	2

	1. General principles of the structure of the endocrine glands, their differences from the exocrine glands. 2. Structural mechanisms of realization of action of hormones. 3. Classification of endocrine organs. 4. Central part of the endocrine system. Pituitary. Hypothalamic-pituitary neurosecretory system (hypothalamic-adenohypophyseal and hypothalamic-neurohypophyseal system). 5. The pineal gland. 6. Peripheral organs of the endocrine system (thoracic gland, thyroid gland, thyroid glands, adrenal glands, endocrine part of the pancreas, gonads, their structure, topography, clinical significance). 7. Features of functional activity of endocrine organs in the prenatal period of human ontogenesis. 8. Options and defects in the development of endocrine organs.	
12	**Functional anatomy of the heart and blood vessels.** 1. Heart, structure, chambers, walls. Topography of the heart. 2. Arteries and veins of the heart. 3. Conductive system of the heart: components, clinical significance. 4. Pericardium, topography, structure, functions. 5. Systemic and pulmonary blood circulations. 6. Vessels of the systemic blood circulation. 7. External carotid artery, topography, branches. Anterior, middle, posterior and terminal branches of the external carotid artery, blood supply. Anastomoses. 8. General characteristics of the venous system, its features from the arterial system, clinical significance. 9. Tributaries of the superior vena cava. 10.Veins of the head and neck: internal jugular vein, intracranial and extracranial tributaries. 11. External jugular vein, tributaries. Anterior jugular vein, tributaries. 12. Tributaries of the portal vein, its formation, clinical significance. 13.Intersystem anastomoses: cava-caval anastomoses, porto-caval anastomoses, their clinical significance. 14. Features of fetal blood circulation.	2
13	**Functional anatomy of lymphatic and immune systems.** 1. General characteristics of the immune system. 2. Hematopoietic organs and immune system. 3. Central organs of the immune system - red bone marrow, thymus. Structure, topography, functions. 4. Peripheral organs of the immune system - spleen, lymph node, tonsils, appendix, etc. 5. General characteristics of the lymphatic system. 6. Characteristics of lymphatic vessels and nodes of the head and neck. Clinical significance.	2
14	**Theoretical prerequisites to studying of the Nervous system. Central and peripheral parts. The concept of animal and autonomic (autonomic) nervous system. Anatomy and functional features of the spinal cord. Segmental apparatus of the spinal cord. The concept of reflex arcs.** 1. General characteristics of the nervous system. 2. Classification of the nervous system. 3. The concept of a neuron. 4. The concept of reflex arcs. 5. Development of the spinal cord. 6. External and internal structure of the spinal cord. Localization of gray and white matter of the spinal cord.	2

	7. Meninges and blood supply to the spinal cord. Topography. 8. Developmental abnormalities and pathology of the spinal cord.	
15	**Brainstem. Structure and functional features of the medulla oblongata, pons, midbrain and diencephalon** 1. Development of the brain. 2. Brainstem, general characteristics. 3. The medulla oblongata. Localization of gray and white matter. Topography. Clinical significance. 4. The pons. Localization of gray and white matter. Topography. Clinical significance. 5. Isthmus of the rhomboid brain. Fourth ventricle: walls. 6. Rhomboid fossa: projection of the nuclei of cranial nerves on the fossa, their general characteristics. 7. Midbrain: topography, localization of gray and white matter. 8. Cerebral aqueduct. Cerebral peduncles. 9. General characteristics of the diencephalon. Hypothalamus, metathalamus, epithalamus, structures. Localization of gray and white matter. Topography. Clinical significance. 10. The third ventricle, walls, connections.	2
16	**The telencephalon, the ancient, old and new formation of the cerebral hemispheres. The concept of limbic brain and reticular formation. The nuclei of the striopalidar system.** 1. General characteristics of the telencephalon. 2. Hemispheres: surfaces, particles. Relief of the cerebral cortex. 3. Dynamic localization of functions in the cortex. 4. The concept of cortical centers of analyzers. 5. Structures of the olfactory brain. Limbic system. 6. Basal ganglia. Striopalidar system, clinical significance, pathological conditions. 7. Lateral ventricles. 8. White matter of the hemispheres: commissural, associative, projection pathways of the brain. 9. Meninges. 10. Cerebrospinal fluid: formation, circulation, outflow. Clinical significance and biochemical composition.	2
17	**Theoretical prerequisites to stud of the sense organs and the nervous pathways of the central nervous system. Ascending projection pathways of the brain and spinal cord. Descending projection pathways (pyramidal and extrapyramidal).** 1. General characteristics of the projection pathways of the brain and spinal cord. 2. Ascending projection pathways of the cortical direction. 3. Ascending projection pathways of the cerebellar direction. 4. Descending projection pathways of the brain and spinal cord. Pyramid ways. 5. Descending projection pathways of the brain and spinal cord. Extrapyramidal pathways.	2
18	**General anatomy of the peripheral nervous system. Spinal nerves. Plexuses.** 1. Characteristics of the peripheral nervous system. 2. Spinal nerves: formation, structure, branches. 3. Posterior branches of spinal nerves, areas of innervation. 4. Anterior branches of the spinal nerves. 5. Cervical plexus, branches, areas of innervation. Diaphragmatic nerve, topography.	2

	6. Brachial plexus: short, long branches, areas of innervation. 7. Intercostal nerves: topography, areas of innervation. 8. Lumbar plexus, areas of innervation, clinical significance. 9. Sacrococcygeal plexus, branches, topography, areas of innervation. 10. The sciatic nerve: topography of branches, areas of innervation, clinical significance.	
19	**The peripheral nervous system. Cranial nerves.** 1. General characteristics of cranial nerves: structure, topography, functions. 2. Oculomotor nerve: branches, areas of innervation. Trochlear nerve: branches, areas of innervation. Abducent nerve: branches, areas of innervation. 3. General characteristics of the trigeminal nerve: formation, areas of innervation. 4. Innervation of the teeth of the maxilla. 5. Mandibular nerve, topography, branches, areas of innervation. 6. Facial nerve. Intermediate nerve: nuclei, characteristics, branches, areas of innervation. Facial nerve: areas of innervation. Clinical significance. 7. Characteristics of the vagus nerve: topography, branches, areas of innervation. Branches of the cranial, cervical, thoracic and abdominal parts of the vagus nerve, their clinical significance. 8. General characteristics of the glossopharyngeal nerve: nuclei, branches, areas of innervation. 9. Acsessory and hypoglossal nerves: nuclei, branches, areas of innervation, clinical significance.	2
20	**Reviews of the autonomic nervous system, its central parts. Principles of vegetative innervation of organs.** 1. General characteristics of the autonomic nervous system. 2. Sympathetic part of the autonomic nervous system: central and peripheral departments, clinical significance. 3. Characteristics of the parasympathetic part of the autonomic nervous system: departments, areas of innervation, clinical significance. 4. Features of vegetative innervation of the head and neck: vegetative nodes of the head and neck.	2
21	**Anatomy of the sense organs. Visual analyzer: peripheral parts (eyeball and auxiliary apparatus), conductive pathways, subcortical and cortical centers.** 1. The concept of analyzers. 2. Characteristics of the sense organs. 3. General characteristics of the organ of vision. 4. Eyeball: cameras, tunics, refracting media. 5. Auxiliary apparatus of the visual organ: eyelids, lacrimal apparatus, etc. 6. The conductive pathway of the organ of vision. II pair of cranial nerves	2
22	**Auditory and stato-kinetic analyzers: peripheral parts, conductive pathways. Subcortical and cortical centers.** 1. General characteristics of the organ of hearing and balance. 2. External, middle, inner ear, structure, components. Tympanic cavity: walls, contents, auditory ossicles. 3.VIII pair of cranial nerves. The conductive pathway of the organ of hearing and balance. 4. General characteristics of the ways of special sensitivity.	2
	Total	**44**

Thematic plan of practical classes by modules and content modules, specifying the basic issues, which are considered at the practical class

Seq. No.	Title of the topic	Number of hours
	Content module 1. Introduction to anatomy	
1	Anatomical nomenclature. General anatomical terms. Axes and planes of the human body. 1. Introduction to anatomy. Human anatomy - the science of form and structure, origin and development of the human body, its organs and systems. 2. The main modern directions of anatomy development - age anatomy, comparative anatomy, plastic anatomy, anthropology, ecological anatomy, etc. 3. The main methods of research in anatomy - visual research, anthropometric research, preparation, macro-microscopic research. 4. Modern research methods in anatomy: X-ray anatomical methods, computed tomography, magnetic resonance imaging (MRI), ultrasound (ultrasound), endoscopy, etc. 5. Anatomical terminology. 6. Axes and planes of the human body.	2
	Content module 2. Anatomy of skeletal bones	
2	General signs of vertebrae. Cervical, thoracic, lumbar vertebrae. Sacrum. Coccyx. Features of the structure of the spine. Developmental anomalies. 1. General data about the skeleton. 2. Primary and secondary bones. 3. Classification of bones. 4. The bone as an organ. Compact and spongy bone substances, their structure. Chemical composition, physical and mechanical properties of bone. 5. The structure of the tubular bone: its parts. 5. Features of bone structure in children, adolescents, adults, the elderly and senile age. 6. Bones in the X-ray image. 7. The impact of sports and work on bone structure. 8. The influence of social factors and ecology on the development and structure of skeletal bones. 9. General characteristics of the spine. 10. General plan of the structure of the vertebrae. 11. General data about the skeleton. 12. Features of the structure of the lumbar vertebrae, sacrum and coccyx. 13. Age and sex features of the structure of the vertebrae. 14. The influence of social and environmental factors on the structure of the vertebrae. 15. Defects in the development of vertebrae.	2
3	Ribs, Sternum. Clavicle. Scapula. Structure, developmental anomalies. 1. Classification of ribs. 2. The structure of the ribs and sternum. 3. Forms of variability of ribs and sternum, variants and anomalies of	2

	development. 4. Age and sex features of the structure of the sternum. 5. The influence of social and environmental factors on the structure of the ribs and sternum. 6. The structure of the bones of the upper limb girdle. 7. Anomalies in the development of the scapula, clavicle.	
4	Skull bones: frontal, parietal, occipital. Features of development, structure, anomalies. 1. The Neurocranium. 2. The structure of the bones that make up the neurocranium: -frontal, -occipital, -parietal. 3. Age and sex features of the skull. 4. Variants and anomalies of skull bone development. 5. X-ray anatomy of the skull.	2
5	Temporal bone: features of structure, development, parts. Temporal bone. Channels and canaliculi of the temporal bone. Tympanic cavity, its walls. Anomalies in the development of the temporal bone. 1. The structure of the temporal bone. 2. Features of the structure of the temporal bone. 3. Parts of the temporal bone. 4. The structure of the channels of the temporal bone. Channel content. Clinical significance.	2
6	Sphenoid and ethmoid bones of the skull. 1. The structure of the sphenoid bone. Foramens of the greater wing, clinical significance. 2. The structure of the ethmoid bone.	2
7	Bones of the facial skull: maxilla, mandible. Bones of the facial skull: nasal bone, zygomatic bones, vomer, lacrimal bone, inferior nasal concha, palatine bone, hyoid bone. Structure, developmental anomalies. 1. The structure of the bones that form the facial skull: - mandible, parts; - maxilla, parts. 2. Counterforces. 3. The structure of the bones of the facial skull: - zygomatic, - nasal, - palatine, - lacrimal, - hyoid, - vomer, - inferior nasal concha.	2
8	External and internal base of the skull. The skull as a whole. 1. Vault of the skull. 2. Forms of the external base of the skull. Clinical significance. 3. Forms of the internal base of the skull. Clinical significance. 4. Anterior, middle and posterior cranial fossae. Connections.	2
9	The orbit, its walls. Bone base of the nasal cavity. Bone palate. Developmental anomalies. 1. The orbit, its connections, walls. 2. Bone base of the nasal cavity, joints. Perinasal sinuses. 3. Bone palate.	2

10	Temporal, infratemporal, pterygopalatine fossa of the skull, their connections, clinical significance. The skull as whole. Contrforces. 1. Temporal fossa, walls, connections 2. Infratemporal fossa, walls, connections 3. Pterygopalatine fossa, walls, connections 4. Contforces.	2
	Content module 3. Connections of skeletal bones	
11	General syndesmology. Types of connections. Classification of joints. Connection between vertebrae. The spinal column as a whole. Curves of the spine. Pathology and developmental abnormalities. Age features. Connections of the spine with the ribs. Connections the ribs with the sternum. Thorax as a whole. Pathology and abnormalities of thorax development. 1. Classification of connections between bones. 2. Types of synarthrosis: fibrous joints (syndesmoses) - membranes, ligaments, sutures, temples; cartilaginous joints (synchondrosis) - permanent, temporary, hyaline, fibrous, symphysis. 3. Diarthrosis (synovial joints, joints): definition, main features of the joint, their characteristics. Additional components of the joints. 4. Classification of joints by structure, shape of joint surfaces, by function. 5. Simple, complex, compound and combined joints: their characteristics. 6. Types of movements and their analysis (axes of movements, planes of movements). 7. Uniaxial, biaxial and multiaxial joints, their types, characteristics of movements in each type of joint. 8. Classification of spinal column connections. 9. Syndesmosis of the spine: their characteristics and structure. 10. Synchondrosis of the spine: their characteristics and structure. 12. Lumbar-sacral joint, sacro-coccygeal joint: their structure. 13. The spinal column as a whole. Age, sex features of the spine as a whole. 14. The impact of sports, work, social factors and environmental factors on the spine as a whole. 15. Connections of the thorax: syndesmoses, synchondrosis and joints (costovertebral joints, costotransverse joints): their characteristics and structure. 16. Thorax as a whole, its structure. Shapes of the chest. 17. The influence of sports, work, social factors and environmental factors on the structure of the chest.	2
12	Connection of the spine with the skull. Temporomandibular joint, structure, biomechanics of movements. Atlanto-occipital, atlanto-axial joints, structure, biomechanics of movements. Age and sexual characteristics of the skull. X-ray anatomy of the skull. Craniometry. 1. Joints of the spine: midian atlanto-axial joint, lateral atlanto-axial joint. 2. Skull connection: classification. 3. Syndesmosis of the skull: sutures, their types and characteristics. 4. Synchondrosis of the skull: their types, characteristics, age features. 5. Skull joints: temporomandibular joint, structure. 6. Age features of the skull connection: fontanels, their types, structure, terms of ossification.	2

	7. Sexual features of the skull. 8. X-ray anatomy of the skull. 9. Craniometry.	
	Content module 4. Myology	
13	Review of the structure of the muscular system. Muscles of the head, mimic muscles. Masticatory muscles, functions. Osseo-fascial and intermuscular spaces of the head. 1. Auxiliary apparatus of the muscles: fascia, synovial vagina, synovial bags, sesamoid bones, tendon arch, muscle block. 2. Anatomical and physiological diameters of muscles: basic data on muscle strength and function; the concept of levers. 3. The beginning and attachment of muscles: their functional characteristics. 4. Classification of muscles: by development, topography, shape, size, direction of muscle fibers, function, etc. 5. Sources of development of muscles of the trunk, head, neck, upper and lower extremities. 6. Muscles of the head, facial muscles. Features of structure, attachment. 7. Classification of head muscles. Masticatory muscles. Bone-fascial spaces of the head. Cellular spaces.	2
14	Muscles and fascia of the neck. Topography of the neck: triangles of the neck, their boundaries, clinical significance. 1. Neck muscles: classification. 2. Superficial, middle and deep muscles of the neck, their characteristics. 3. Fascia of the neck: anatomical classification and anatomical and topographic classification. 4. Topography of the neck: areas, triangles, spaces. Clinical significance.	2
15	Muscles and fascia of the back. Topography. 1. Classification of muscles: by development, topography, shape, size, direction of muscle fibers, function, etc. 2. Sources of muscle development of the trunk, head, neck, upper and lower extremities. 3. Classification of trunk muscles by topography, development and shape. 4. Segmental structure of trunk muscles. 5. Muscles of the back: superficial and deep, their characteristics. 6. Thoracolumbar fascia.	2
16	Muscles and fascia of the chest. Diaphragm. 1. Muscles of the chest: superficial and deep, their characteristics. 2. Thoracic fascia, intrathoracic fascia. 3. Diaphragm: definition. 4. Parts of the diaphragm, holes, their contents, triangles. 5. Weaknesses of the diaphragm.	2
17	Muscles and fascia of the abdomen. The vagina of the rectus abdominis. Inguinal canal. White line of the abdomen. Topography of the anterior abdominal wall. 1. Abdominal muscles: muscles of the anterior, lateral and posterior walls of the abdomen, their characteristics. 2. Abdominal fascia. 3. Linea alba. Clinical significance.	2

	4. Umbilical ring. 5. Abdominal press. 6. Topography of the abdomen. 7. Inguinal canal. Content, clinical significance. 8. The vagina of the rectus abdominis.	
18	**Content modular control in myology. Step -1.**	2*
	Content module 5. Anatomy of the digestive system	
19	Review of the digestive system. Oral cavity. Palate. Tongue, structure, functions, abnormalities. Salivary glands. Classification, structure, functions. Cellular spaces of the oral cavity. 1. Classification of internal organs: tubular and parenchymal. 2. General plan of the structure of the wall of the tubular organs: mucous membrane, muscular membrane, external membrane. Characteristics of each membrane. 3. Organ-specific features of the structure of the mucous membrane depending on the function of the organ. 4. Serous membrane: options for the relationship of organs to the peritoneum. 5. General patterns of structure of parenchymal organs. 6. Glands: their classification, general principles of structure, functions. 7. Digestive system: organs, functions. 8. Development of the oral cavity and its derivatives. 9. Development of the digestive tract. 10. Structural mechanisms of malformations of the oral cavity and its derivatives. 11. Anomalies and variants of development of organs of the digestive tract, liver, pancreas. 12. Oral cavity: its parts. 13. The walls of the vestibule of the oral cavity and the oral cavity proper, their combination. 14. Palate: hard palate, soft palate, their structure. 15. Tongue: parts. Features of the structure of the mucous membrane, the muscles of the tongue. 16. Salivary glands: classification, their development. 17. Small salivary glands: classification, topography, structure. 18. Large salivary glands: topography, characteristics, structure, classification.	2
20	Teeth: general anatomy, structure of the dental organ. Periodont, paradont, dental segment. Anatomy of temporary teeth. Formulas of the teeth. Features of the structure. Terms of eruption. Developmental anomalies, pathology. 1. Teeth. General characteristics. 2. Parts of the tooth. 3. Surface of the crown. 4. General structure of teeth. 5. Periodontist, periodontist. Gums. 6. Temporary and permanent teeth: formulas, features of structure, terms of eruption. 7. X-ray anatomy of teeth. 8. Development of teeth. 9. Anomalies and options for the development of temporary and permanent teeth.	2

21	Anatomy of permanent teeth. Formulas of the teeth. Features of the structure. Terms of eruption. Developmental anomalies, pathology. The dental system as a whole. Bites, occlusion. 1. Permanent teeth: their formula, characteristics of each type of teeth. 2. Terms of eruption of permanent teeth. 3. The concept of occlusion, types of occlusion. 4. Physiological and pathological bites.	2
22	Pharynx. Esophagus. Stomach. 1. Pharynx, its topography, parts, connections. 2. Fauces, its limits. 3. Lymphatic (lymphoid) ring of the pharynx. 4. Structure of the pharyngeal wall: mucous membrane, pharyngealbasilar fascia, pharyngeal muscles, external membrane. 5. Esophagus: topography, parts, wall structure. 6. Narrowing of the esophagus. X-ray anatomy of the esophagus. 7. Stomach: topography, parts of the stomach. 8. Structure of the stomach wall: features of the structure of the mucous membrane (relief, glands), muscular membrane and serous membrane. 9. X-ray characteristics of the mucous membrane. 10. The relationship of the stomach to the peritoneum. 11. Stomach ligaments. 12. Variants of the shape of the stomach: anatomical (on the cadaver) and radiological (in a living person). 13. The shape of the stomach depending on the types of body structure. 14. Age features of topography and structure of a stomach.	2
23	Small intestine: structure, topography, functions. Colon: structure, topography, functions. Anomalies in the development of the digestive system. 1. The small intestine, its departments. 2. The duodenum: parts, topography, variants of its shape and position. 3. X-ray anatomy of the duodenum. 4. Topography of the mesenteric part of the small intestine: jejunum and ileum. 5. The structure of the wall of the small intestine. 6. The structure of the mucous membrane: intestinal villi, glands, folds, lymphatic (lymphoid) nodules. 7. Features of the structure of the mucous membrane of the small intestine in its various departments. 8. The structure of the muscular membrane. 9. Relation to the peritoneum of each small intestine. 10. Age features of a structure of a small intestine. 11. Large intestine: departments. 12. The structure of the wall of the large intestine: mucous membrane (glands, folds, lymphatic (lymphoid) nodules), muscular membrane, serous membrane. 13. Relation to the peritoneum of each part of the colon. 14. The cecum and the appendix: topography, structural features. 15. Variants of the position of the appendix and its projection on the anterior abdominal wall. 16. Colon: parts, folds, their topography, features of the structure of the mucous membrane and muscular membrane. Relation to the peritoneum. 17. Rectum: parts, folds, topography. 18. Features of the topography of the rectum depending on gender.	2

	19. Features of the structure of the mucous membrane and muscular membrane. Relation to the peritoneum. The anal canal: topography, features of the structure of the mucous membranes and muscles. M. sphincter ani. 20. Macroscopic changes in the structure of the small and large intestine. 21. Age features of a structure of a large intestine. 22. X-ray anatomy of the colon. 23. Form and position of the colon in a living person.	
24	Liver, gallbladder. Structure, topography, functions. Pancreas: structure, topography, functions, developmental abnormalities. 1. Liver. Topography. External structure: borders, surfaces and their relief. 2. Liver ligaments. Relation to the peritoneum. 3. Internal structure of the liver: lobes, segments, lobules. 4. Vessels of the liver. Liver function. 5. Ways of bile secretion. 6. Gallbladder: topography, parts, wall structure, functions. 7. Common bile duct: formation, topography. 8. Age features of topography and structure of a liver. Age features of the structure of the gallbladder. 9. Pancreas: parts, topography, structure, functions. 10. Ducts of the pancreas. 11. Pancreatic islets. 12. Age features of topography and structure of the pancreas.	2
	Content module 6. Anatomy of the respiratory system	
25	Review of the respiratory system. External nose. Nasal cavity. Perinatal sinuses. Larynx. Structure, topography, functions. Trachea. Bronchi. 1. Respiratory system: organs, functions. 2. Upper and lower respiratory tract. 3. Variants and anomalies of development of respiratory system organs. 4. External nose: parts, structure. 5. Nasal cavity: dorsum, nasal passages, paranasal sinuses. 6. Functional parts of the nasal cavity. 7. Nasal part of the pharynx. 8. Age features of the nasal cavity. 9. Larynx. Topography. 10. The structure of the larynx: cartilage, ligaments, joints, muscles. Elastic cone, quadrangular membrane. 11. The cavity of the larynx: parts, their boundaries. 12. Voice folds, vestibular folds. Glottis. Mechanisms of sound formation. 13. X-ray anatomy of the larynx. 14. Age features of the larynx. 15. Trachea: parts, topography, wall structure. 16. Main bronchi: topography, wall structure. 17. Bronchial tree. 18. Age features of the trachea and main bronchi.	2
26	Lungs. Pleura. The mediastinum. X-ray anatomy of the respiratory system. 1. Lungs: topography, external structure. 2. Hilum of lung. 3. The root of the lung and its components.	2

	4. Parts, segments, lobes of the lung. 5. Acinus. 6. The circulatory system of the lungs. 7. X-ray anatomy of the lungs. Age features of the lungs 8. Pleura. Parietal pleura and its topographic parts. Visceral pleura. 9. Pleural cavity: contents, recessus, their functional value. 10. Projection of pleural sacs on the walls of the thoracic cavity. 11. Mediastinum: definitions, boundaries. 12. Organs of the anterior mediastinum. 13. Organs of the posterior mediastinum. 14. X-ray anatomy of the respiratory system.	
	Content module 7. Anatomy of the urinary system	
27	Anatomy of the urinary system. Kidneys: structure, topography, functions. Ureters, urinary bladder, urethra. Features of male and female urethra. 1. Urinary system: organs, functions. 2. Options and anomalies in the development of the urinary system: kidneys, ureters, urinary bladder and urethra. 3. Kidney: topography of the right and left kidney. 4. The external structure of the kidney. The relations of the kidney to the peritoneum. 5. Kidney coats. 6. Fixing apparatus of the kidney. 7. Topography of the elements of the renal stalk. 8. The internal structure of the kidney. 9. Kidney segments. 10. Nephron is the structural and functional unit of the kidney. 11. The structure of the circulatory system of the kidney. 12. Urinary tract. The minor renal calyces, the major renal calyces, renal pelvis, wall structure, functions. 13. X-ray anatomy of the kidney. 14. Age features of topography and structure of a kidney. 15. Ureter: parts, topography, wall structure, function. Relation to the peritoneum. Constrictions of the ureter. 16. Urinary bladder: shape, external structure, parts. 17. Features of topography in men and women. 18. The structure of the urinary bladder wall: features of the structure of the mucous membrane, muscular membrane. 19. Relation to the peritoneum (depending on the functional state).	2
	Content module 8. Anatomy of genital systems	
28	Female genital system: external and internal genitalia. Defects and developmental anomalies. Perineum. 1. Female genital system: organs, functions. 2. Classification of the female genital system. 3. Female internal genitalia. 4. Variants and anomalies of development of female internal genitalia: ovaries, fallopian tubes, uterus, vagina. 5. Ovary: topography, external structure, internal structure, ovarian ligaments, relation to the peritoneum, functions. 6. Age features of the ovary. 7. Uterine tube: topography, parts, wall structure, relation to the peritoneum, functions. 8. Uterus: topography, shape, parts, wall structure.	2

	9. Uterine ligaments, attitude to the peritoneum, functions. 10. Age features of a structure of a uterus and options of its position. 11. Vagina: vault, wall structure. 12. X-ray anatomy of internal female genitals. 13. Female external genitalia, defects and developmental abnormalities. 14. Perineum.	
29	Male genital system. Male internal genitalia. Male external genitalia. Defects and developmental anomalies. 1. Male genital system: organs, functions. 2. Classification of the male genital system. 3. Male internal genitalia. Variants and anomalies of development of male internal genitalia: testicles, epididymis, ductus deferens, seminal vesicle, prostate gland. 4. Testicle: topography, structure. Epididymis. 5. The process of lowering the testicle. 6. Testicular tunics. 7. Ductus deferens: parts, its topography, wall structure. 8. The spermatic cord, its components. 9. Seminal vesicle: topography, structure, functions. 10. The ejaculatory duct. 11. Prostate: topography, parts, structure, functions. 12. Bulbous-urethral gland. 13. Age features of male internal genitalia. 14. Male external genitalia. Developmental anomalies.	2
	Content module 9. Anatomy of the endocrine systems	
30	General principles of the structure of the endocrine glands. Central part of the endocrine system. Pituitary. The pineal gland. Peripheral organs of the endocrine system (thyroid gland, parathyroid glands, adrenal gland, endocrine part of the pancreas, gonads). 1. General principles of the structure of the endocrine glands, their differences from the exocrine glands. 2. Structural definition of "endocrine function". 3. Structural mechanisms of realization of hormones. 4. Classification of endocrine organs. 5. Central department of the endocrine system. 6. The pituitary gland. Hypothalamic-pituitary neurosecretory system (hypothalamic-adenohypophyseal and hypothalamic-neurohypophyseal system). 7. Epiphysis. 8. Features of functional activity of endocrine organs in the prenatal period of human ontogenesis. 9. Options and defects in the development of endocrine organs. 10. Pituitary gland: topography, parts, structure, functions. 11. Peripheral organs of the endocrine system. 12. Thyroid gland: topography, parts, structure, functions. 13.Parathyroid glands: topography, parts, structure, functions. 14. Adrenal glands: topography, parts, structure, functions. 15. Endocrine part of the pancreas: topography, structure, functions. 16. Gonads: topography, parts, structure, functions.	2
31	Consolidation of practical skills from content modules №1 - №9. Step-1.	2*****
	Content module 10. Anatomy of the heart	

32	Heart. Topography of the heart. Circles of blood circulation. Aorta. 1. Development of the heart. 2. Functions of the heart. 3. The structure of the heart wall. 4. Chambers of the heart, valve apparatus, its components. 5. Topography of the heart (boundaries, auscultation points). 6. Systemic circulation and pulmonary circulation. 7. General plan of vascular structure. Aorta: structure, topography. 8. The aortic arch, the branches of the aortic arch.	2
33	Heart: blood vessels, nerves, conduction system of the heart, pericardium. 1. Arteries and veins of the heart. 2. Cardiac circulation. 3. Conductive system of the heart: components, clinical significance. 4. 4. Pericardium, topography, structure, functions. 5. Pericardial sinuses, clinical significance.	2
	Content module 11. Vessels of the head and neck.	
34	Common and internal carotid artery. Branches. Area of blood supply. 1. General plan of vascular structure. Aorta: structure, topography. Aortic arch, branches of the aortic arch. 2. Common carotid artery. Topography. 3. Internal carotid artery: topography, parts, branches, areas of blood supply. 4. The Willis circle of the brain: components, clinical significance. Anastomoses. 5. Blood supply to the organ of vision. 6. Anastomoses with other vessels.	2
35	External carotid artery. Anterior branches, areas of blood supply. External carotid artery, middle and posterior branches, areas of blood supply. 1. General characteristics of the external carotid artery. 2. Topography of the external carotid artery. 3. Anterior branches of the external carotid artery, areas of blood supply. 4. Superior thyroid artery, areas of blood supply. 5. Lingual artery, areas of blood supply. 6. Facial artery, areas of blood supply. 7. Anastomoses of the anterior branches of the external carotid artery. 8. The middle branches of the external carotid artery, the blood supply. 9. Posterior branches, areas of blood supply. 10. Maxillary artery: topography, branches, divisions, areas of blood supply. 11. Blood supply to the teeth of the maxilla and mandible. Anastomoses. 12. Blood supply to the masticatory muscles. 13. Superficial temporal artery, topography, branches, areas of blood supply.	2*****
36	Subclavian artery. Topography, branches, areas of blood supply. 1. General characteristics of the subclavian artery. 2. Subclavian artery: topography, branches. 3. Areas of blood supply and anastomoses of the subclavian artery. 4. Vertebral artery, branches, areas of blood supply. 5. Thyrocervical trunk, branches, areas of blood supply.	2

	6. Internal thoracic artery, branches, areas of blood supply. 7. Components of the Willis circle of the blood supply to the brain. 8. Zakharchenko's circle (blood supply to the brain bulb).	
	Content module 12. Vessels and nerves of the trunk	
37	Thoracic aorta. Branches, areas of blood supply. Parietal branches of the abdominal aorta. Paired visceral branches of the abdominal aorta, blood supply. Unpaired visceral branches of the abdominal aorta. 1. Thoracic aorta: topography. 2. Parietal branches of the thoracic aorta, areas of blood supply. 3. Visceral branches of the thoracic aorta, areas of blood supply. Anastomoses. 4. General characteristics of the abdominal aorta. 5. Parietal branches of the abdominal aorta, areas of blood supply. 6. Paired visceral branches of the abdominal aorta: areas of blood supply. Anastomoses. 7. Unpaired branches of the abdominal aorta. 8. Coeliac trunk, topography, branches, areas of blood supply. 9. Superior mesenteric artery, topography, branches, areas of blood supply. 10. Inferior mesenteric artery, topography, branches, areas of blood supply. 11. Anastomoses of unpaired branches of the abdominal aorta, their clinical significance.	2
38	Iliac arteries and femoral arteries, anastomoses. 1. External iliac artery. Topography, branches, areas of blood supply. 2. Internal iliac artery, topography, branches, areas of blood supply. 3. Blood supply of the pelvic organs. Clinical aspects. 4. Anastomoses of iliac arteries, their clinical significance. 5. Femoral artery, topography, branches, areas of blood supply, anastomoses.	
	Content module 13. Vessels and nerves of the upper and lower extremities	
39	General characteristics of the venous system. Veins of the head and neck. The system of the superior vena cava. Veins of the trunk, chest, upper extremities. 1. General characteristics of the venous system. 2. Features of the venous system from the arterial system, clinical significance. 3. Tributaries of the superior vena cava. 4. Veins of the head and neck, general characteristics. 5. Internal jugular vein, intracranial and extracranial tributaries. 6. External jugular vein, tributaries. 7. Anterior jugular vein, tributaries. 8. Tributaries of the superior vena cava. 9. Veins of the chest: tributaries, anastomoses. 10. Veins of the upper extremities: tributaries, anastomoses.	2
40	The system of the inferior vena cava. 1. Formation of the inferior vena cava: tributaries. 2. Veins of the lower extremities, tributaries, anastomoses. 3. Pelvic veins, tributaries, anastomoses. 4. Veins of the abdominal cavity: tributaries, anastomoses.	2
41	The portal vein system. Intrasystemic and intersystemic venous anastomoses. Features of blood supply to the fetus.	2

	1. Tributaries of the portal vein, its formation, clinical significance. 2. Cava-caval anastomoses, their clinical significance. 3. Porto-caval anastomoses, their clinical significance. 4. Porto-cava-caval anastomosis, clinical significance. 5. Features of fetal blood circulation.2	
42	Immune system. Hematopoietic organs. General characteristics of the lymphatic system. 1. General characteristics of the immune system. Function. 2. Hematopoietic organs and immune system. 3. Central organs of the immune system: red bone marrow, thymus. 4. Peripheral department: spleen, lymph node, tonsils, appendix. 5. General characteristics of the lymphatic system. 6. Thoracic duct. Tributaries, clinical significance. 7. Right lymphatic duct.	2
43	Lymphatic vessels and nodes of the head and neck. 1. Characteristics of lymphatic vessels and nodes of the head and neck. Clinical significance. 2. Lymphatic vessels and nodes of the head. 3. Lymphatic vessels and nodes of the neck. 4. Outflow of lymph from the upper teeth. 5. Outflow of lymph from the lower teeth. 6. Outflow of lymph from the tongue.	2
44	Content modular control of "Cardiovascular system and immune system". Step - 1	2*****
	Content module 14. Anatomy of the spinal cord	
45	Review of the structure of the central nervous system, classification of the nervous system, neuron. The external structure of the spinal cord. Anatomy of the spinal cord. Internal structure. Gray and white matter. Meninges and vessels of the spinal cord. 1. General characteristics of the nervous system. 2. Classification of the nervous system. 3. The concept of a neuron. 4. Reflex arcs. 5. Characteristics of the spinal cord, function. 6. The external structure of the spinal cord. 7. Skeletotopy of the spinal cord. 8. Localization of gray and white matter of the spinal cord. 9. Meninges and blood supply to the spinal cord. Topography.	2
	Content module 15. Anatomy of the brain.	
46	Anatomy of the medulla oblongata and pons. 1. The medulla oblongata. External structure, boundaries. 2. Localization of gray and white matter of the medulla oblongata. Clinical aspects. 3. Pons. External structure, boundaries. 4. Localization of gray and white matter of the bridge. Topography. Clinical significance.	2
47	Cerebellum. Rhomboid fossa. The isthmus of the rhomboid brain. 4th ventricle. Projection of nuclei of cranial nerves on the rhomboid fossa. 1. Cerebellum: general characteristics. 2. Localization of gray and white matter. 3. The nuclei of the cerebellum. 4. Development of the cerebellum in phylogenesis and ontogenesis. Clinical significance.	2

	5. Peduncles of the cerebellum. 6. Isthmus of the rhomboid brain. 7. The fourth ventricle: walls. 8. Rhomboid fossa: projection of the nuclei of cranial nerves on the fossa, their general characteristics.	
48	Anatomy of the midbrain. 1. Midbrain, external structure, boundaries. 2. Localization of gray and white matter of the midbrain. 3. Aqueductus cerebri. 4. Peduncles of the brain.	2
49	Anatomy of the diencephalon. III ventricle. 1. General characteristics of the diencephalon. 2. Hypothalamus, its components, clinical significance. 3. Metalamus, its components, clinical significance. 4. Epithalamus, its components, clinical significance. 5. The third ventricle, walls, connections.	2
50	The telencephalon. Hemispheres, relief of the cortex. Dynamic localization of functions in the cortex of large hemispheres. 1. General characteristics of the final brain. 2. Hemispheres: surfaces, particles. 3. Relief of the cortex of the hemispheres of the final brain. 4. Dynamic localization of functions in the cortex. 5. The concept of cortical centers of analyzers.	2
51	Rhinencephalon. Basal ganglia. Striopallidary system. 1. Structures of the rhinencephalon. 2. Basal ganglia. 3. Striopallidary system, clinical significance, pathological conditions.	2
52	White matter of the hemispheres. Lateral ventricles. Meninges. Cerebrospinal fluid, formation, circulation, outflow. 1. Lateral ventricles. 2. White matter of the hemispheres: commissural, associative, projection pathways of the brain. 3. Meninges. 4. Cerebrospinal fluid: formation, circulation, outflow. Clinical significance and biochemical composition.	2
53	Ascending nervous pathways of the brain and spinal cord. 1. General characteristics of the nervous pathways of the brain and spinal cord, ascending nervous pathways of the cortical and cerebellar direction.	2
54	Descending nervous pathways of the brain and spinal cord. 1. Descending nervous pathways of the brain and spinal cord: pyramidal and extrapyramidal pathways.	2
55	Content modular control: "Central nervous system. Nervous pathways of the brain and spinal cord "Step - 1.	2*
	Content module 16. Spinal nerves and cranial nerves.	
56	General characteristics of the peripheral nervous system. Formation, structure of spinal nerves. Posterior branches of spinal nerves, areas of innervation. Anterior branches: cervical plexus, topography, areas of innervation. Brachial plexus, topography, short and long branches, areas of innervation. 1. Characteristics of the peripheral nervous system. 2. Spinal nerves: formation, structure, branches. 3. Posterior branches of spinal nerves, areas of innervation.	2

	4. Anterior branches of the spinal nerves. 5. Cervical plexus, branches, areas of innervation. 6. Diaphragmatic nerve, topography. Clinical significance. 7. Brachial plexus: topography. 8. Short branches, areas of innervation. 9. Long branches, areas of innervation. 10. Clinical aspects of lesions of the branches of the brachial plexus.	
57	Intercostal nerves, topography, areas of innervation. Lumbar plexus, topography, branches, areas of innervation. Sacral plexus, topography, branches, areas of innervation. Coccygeal and genital plexus, topography, areas of innervation. 1. Intercostal nerves: topography, areas of innervation. 2. Branches of the lumbar plexus, areas of innervation, clinical significance. 3. Sacrococcygeal plexus, branches, topography, areas of innervation. 4. The sciatic nerve: topography of branches, areas of innervation, clinical significance.	2
58	General characteristics of cranial nerves. Development, characteristics. Oculomotor, trochlear and abducens nerves. Branches, areas of innervation. Accessory and hypoglossal nerves. Branches, areas of innervation. 1. General characteristics of cranial nerves: structure, topography, functions. 2. Oculomotor nerve: branches, areas of innervation. 2. Trochlear nerve: branches, areas of innervation. 3. The abducens nerve: areas of innervation. 4. Accessory nerve: nuclei, branches, areas of innervation, clinical significance. 5. Hypoglossal nerve: nuclei, branches, areas of innervation, clinical significance.	
59	The trigeminal nerve. Ophthalmic nerve, the area of innervation. Maxillary nerve, areas of innervation. Mandibular nerve, areas of innervation. The nervous pathway of the trigeminal nerve. 1. General characteristics of the trigeminal nerve: formation, areas of innervation. 2. The first branch, areas of innervation. 3. The second branch of the trigeminal nerve, the area of innervation. 4. Innervation of the teeth of the maxilla. 5. Mandibular nerve, topography, branches, areas of innervation. 6. Innervation of the lower teeth.	2*
60	Facial nerve. General characteristics. Areas of innervation. Intermediate nerve, characteristics of nuclei, branches, areas of innervation. Glossopharyngeal nerve, characteristics, branches, areas of innervation. 1. General characteristics of the nerve. 2. Intermediate nerve: nuclei, characteristics, branches, areas of innervation. 3. Facial nerve: areas of innervation. Clinical significance. 4. General characteristics of the glossopharyngeal nerve: nucleus, branches, areas of innervation. 5. Innervation of the tongue. 6. Innervation of the parotid salivary gland.	2
61	The vagus nerve: general characteristics, nuclei, topography. The cranial and cervical parts of the vagus nerve. Areas of innervation. The	

	vagus nerve: thoracic and abdominal, areas of innervation. 1. Characteristics of the vagus nerve: topography, branches, areas of innervation. 2. Branches of the cranial part of the vagus nerve, areas of innervation. 3. Branches of the cervical part of the vagus nerve, areas of innervation. 4. Branches of the thoracic part of the vagus nerve, areas of innervation. 5. Branches of the abdominal part of the vagus nerve, areas of innervation, clinical significance.	
	Content module 17. Sense organs.	
62	Autonomic nervous system: sympathetic part. Parasympathetic part of the autonomic nervous system. Vegetative innervation of organs. Vegetative nodes of the head and neck. 1. General characteristics of the autonomic nervous system. 2. Sympathetic part of the autonomic nervous system: central and peripheral departments, clinical significance. 3. Characteristics of the parasympathetic part of the autonomic nervous system: departments, areas of innervation, clinical significance. 4. Parasympathetic nodes of the head, topography. 5. Features of vegetative innervation of the head and neck. 6. Vegetative nodes of the head and neck. Clinical significance.	2
63	General characteristics of the sense organs. Skin. The sense of smell. The organ of taste. Nervous pathway. 1. The concept of analyzers. 2. Characteristics of the senses. 3. Skin: structure, functions. 4. The organ of smell. 5. The nervous way of the olfactory organ. 6. Organ of taste: the leading path of the organ of taste. 7. I pair of cranial nerves.	2
64	The organ of vision. Auxiliary apparatus of the visual organ. The nervous pathway of the visual analyzer. 1. General characteristics of the organ of vision. 2. Eyeball: cameras, shells, refracting media. 3. Auxiliary apparatus of the visual organ: eyelids, lacrimal apparatus, etc. 4. The nervous pathway of the organ of vision. 5.II pair of cranial nerves	2
65	Organ of hearing and balance. The nervous pathway of the organ of hearing and balance. 1. General characteristics of the organ of hearing and balance. 2. External, middle, internal ear, structure, components. 3. Tympanic cavity: walls, contents, auditory ossicles. 4.VIII pair of cranial nerves. 5. The nervous pathway of the organ of hearing and balance.	2
66	Content module control on «Central nervous system. Peripheral nervous system. Sensory organs and conducting pathways of the brain and spinal cord» Step 1.	2*****
	Final semester certification (exam)	
	Total	**132**

***- topics for which a positive assessment is required**

Self-directed learning

No.	Title of the topic	Number of hours
1	Preparation for practical classes (66 x 2)	**132**
2	Study of topics that are not included in the classroom plan:	**22**
	Content module 2. The skeletal system	
2.1	Humerus. Bones of the forearm. Structure, developmental anomalies. Bones of the hand. Structure, developmental anomalies. 1. Free part of the upper limb: -humerus, -bones of the forearm, their structure. 2. Terms of ossification of the bones of the upper extremity. 3. Variants and anomalies of development of bones of the upper extremity 4. Bones of the hand, sesamoid bones and their structure. 5. The influence of sports, labor, social factors and environmental factors on the structure of the bones of the upper extremities.	2
2.2	Hip bone and femur. Features of structure, anomalies of development. Bones of the foreleg and foot. Structure, developmental anomalies. 1. Bones of the lower extremity: departments. 2. Pelvic girdle: - hip bone; its structure. 3. Free part of the lower limb: the femur. 4. Terms of ossification of the bones of the lower extremity. 5. Variants and anomalies of development of bones of the lower extremity. 6. Homology of the bones of the upper and lower extremities. 7. Shin and foot bones, their structure. 8. Age, sex features of the structure of the bones of the extremities. 9. Specific features of the structure of the bones of the upper and lower extremities, due to the processes of anthropogenesis. 10. The influence of sports, labor, social factors and environmental factors on the structure of the bones of the lower extremities.	2
	Content module 3. Connections of skeletal bones	
2.3	The connection of the bones of the upper limb girdle. Connections of the free upper limb. 1. Connections of the upper limb. 2. Joints of the shoulder girdle: syndesmoses of the girdle of the upper extremity, joints of the girdle of the upper extremity (acromioclavicular joint and sternoclavicular joint), their structure. 3. Joint of the free upper limb: shoulder joint, elbow joint, connection of forearm bones, radial-carpal joint, wrist joints. 4. X-ray anatomy of the joints of the bones of the upper extremities. 5. The influence of sports, work, social factors and environmental factors on the structure of the bones of the upper extremities and their joints	2
2.4	The connections of the bones of the lower limb girdle. The pelvis as a whole. Pelvic dimensions. Age and gender features. Hip joint. Structure, biomechanics of movements. The connection of the bones of the free lower limb. X-ray anatomy of bones and joints. 1. Pelvic girdle joints: syndesmosis, pubic symphysis, sacroiliac joint. 2. The pelvis as a whole: its structure, the basic sizes.	2

	3. Age, sex, individual features of the pelvis. 4. Connections of the free lower extremity: hip joint, knee joint. 5. Connection of shin bones, ankle joint. 6. X-ray anatomy of the joints of the bones of the lower extremities. 7. The influence of sports, work, social factors and environmental factors on the structure of the joints of the lower extremities.	
	Content module 4. The muscular system	
2.5	Muscles and fascia of the shoulder girdle. Muscles and fascia of the shoulder. Fascia and topography of the upper limb. 1. Upper limb muscles: classification. 2. Muscles of the upper limb girdle, their characteristics. 3. Fascia of the upper limb. 4. The axillary fossa, axillary cavity, its topography, triangles, quadrilateral and triangular openings. 5. Shoulder muscles: classification, their characteristics. 6. Musculotubal canal. Grooves on the front surface of the shoulder. 7. Age, sex and individual features of skeletal muscles. 8. Influence of sports, work, social factors and environmental factors on the structure of skeletal muscles, trunk and limbs. 1. Forearm muscles: classification, their characteristics. 9. Muscles of the forearm. 10. Muscles of the hand: classification, their characteristics. 11. Elbow fossa. Furrows on the front surface of the forearm. 12. Osteofibrous canals, flexor muscle holders, extensor muscle holders. 13. Wrist canals, synovial sheaths of flexor tendons. Synovial bursae.	3
2.6	Muscles and fascia of the pelvis. Topography. Muscles and fascia of the thigh. Femoral canal. Muscles of the leg and foot. Topography of the lower limb. 1. Muscles of the lower extremity: classification. 2. Muscles of the lower extremity girdle: classification, their characteristics. 3. Muscles of the thigh: classification, their characteristics. 4. Femoral triangle. 5. Grooves on the front surface of the thigh. 6. The adductor canal. 7. The popliteal fossa. 8. The femoral canal. 9. Muscles of the foot: classification, their characteristics. 10. Fascia of the lower extremity. 11. Muscular and vascular spaces, their topography and content. 12. Canals of the leg: cruropopliteal canal, superior and inferior musculoperoneal canals. 13. Grooves of the sole of the foot. 14. Saphenous opening. 15. Superior and inferior extensor retinaculum, superior and inferior fibular retinaculum, flexor retinaculum. 16. Synovial bursae and synovial vaginas of the muscles of the lower extremity. 17. Mechanisms that support the arch of the foot: foot puffs, passive (ligaments) and active (muscles). 18. Analysis of the basic positions and movements of the human body (standing, walking, running, jumping).	3
	Content Module 5: The digestive system	

2.7	Peritoneum. 1. Peritoneum. General characteristics. 2. Abdominal cavity, its contents. 3. Peritoneal cavity, its contents. 4. Parietal peritoneum, visceral peritoneum: their characteristics. 5. Options for the relationship of internal organs to the peritoneum. 6. Derived peritoneum: mesentery, omentum, ligaments, their structure and functions. 7. Derivatives of the peritoneal cavity: bags (liver, pancreas, omental - their walls, connections), sinuses, canals, recesses, fossae, cavities. 8. Topography of the peritoneum in the pelvic cavity: sexual characteristics. 9. Topography of the parietal peritoneum on the anterior, posterior walls of the abdominal cavity.	2
	Content module 12: Vessels and nerves of the trunk.	
2.8	Axillary artery. Arteries of the upper extremity. Topography, branches, areas of blood supply. 1. The axillary artery: branches, areas of blood supply, topography. 2. Arteries of the upper extremity: - brachial, - ulnar, - radial. 3. Blood supply of the hand.	2
	Content module 13: Vessels and nerves of the upper and lower extremities.	
2.9	Arteries of the lower extremity. Anastomoses. Topography, areas of blood supply. 1. Arteries of the lower extremity, topography, branches, areas of blood supply. 2. Femoral artery, topography, branches, areas of blood supply, anastomoses. 3. Arteries of the lower leg and foot. Branches, topography, areas of blood supply.	2
	Content module16. Cranial and spinal nerves	
2.10	Autonomic innervation of organs. Vegetative visceral nodes of the head and neck. 1. Features of autonomic inervation of the head and organs of the neck. 2. Autonomic nodes of the head and neck.	2
	Total	**154**

Attention!
Each student must complete all topics of self-directed learning that are not included in the plan of classroom classes for a satisfactory grade on the eAristo platform during the study of the discipline. If topics are not completed, then the student is not allowed to take the exam!

Individual assignments: individual work carried out according to a personalized assignment under the guidance of a teacher of the Department of Human Anatomy, during which the applicant for higher education can receive methodological assistance in the form of individual consultation.

Such work may include the study of individual sections of the discipline, creative work, work with computer technology, etc. These tasks can be of an educational, research, creative, or other nature. Their main purpose is to deepen, generalise and consolidation of the knowledge that higher education students acquire in the course of their studies, as well as applying this knowledge in practice.

Individual tasks are given to students within the time limits provided by the the discipline, and are performed by each student independently with with the teacher's advice. In cases where the assignments are of a complex nature, several students may be involved in their completion, but the result of their work is assessed separately.

Types of individual learning tasks are:

1. Processing additional materials in preparation for participation in the first and second stages of the All-Ukrainian Student Olympiad in the discipline «Human Anatomy».
2. Review of literary sources necessary for the performance of independent scientific research and preparation of scientific publications and reports, creating presentations.
3. Writing abstracts and report materials.
4. Work with dictionaries, reference books, professional literature.
5. Preparing presentations, making visual aids (tables, macro preparations). The grade for individual work is given on a traditional scale and affects the current academic performance of the student.

The list of theoretical questions for preparation of applicants for higher education for the semester final attestation (exam) in the discipline "Human Anatomy"

1. The main axes and planes of the human body.
2. Small intestine: departments, their topography, relation to a peritoneum. The structure of the mucous membrane of the small intestine.
3. General plan of the structure of the vertebrae: describe and demonstrate on preparation. Features of the structure of the cervical, thoracic, lumbar vertebrae.
4. The bone as an organ. Classification of bones. The main stages of bone development.
5. Esophagus: parts, topography; wall structure. Anatomical and physiological contrictions of the esophagus.
6. The structure of the tongue: describe and demonstrate on preparation.
7. Mimic muscles: structure, functions.
8. The vertebral column as a whole. Parts of the vertebral column: name and demonstrate on preparation.
9. Muscles of the neck: topographic classification, structure, functions. Topography of the neck: areas, triangles, interscalene spaces.
10. Lungs: topography; particles, segments, lobes, acinuses. Acinus: definition, structure, functions.
11. Classification of ribs. Structure of 1-12 ribs: describe and demonstrate on preparation.
12. Masticatory muscles: structure, functions.
13. The structure of the sternum. Thorax as whole: describe and demonstrate on preparation.
14. Classification of bone joints: discontinuous and continuous. Syndesmoses, synchondrosis, synostosis: definition, formation, examples.
15. Parts of the skull: describe and demonstrate on preparations. Neurocranium: parts, name and demonstrate on the preparation the bones that form the vault and base of the skull.
16. Muscles of the chest: topographic classification, structure, functions. Aperture: topography, parts, functions.

17. Temporal bone: parts - describe and demonstrate on the preparations and on the skull. Temporal canals: demonstrate the course of the facial canal, the carotid canal, and the musculotubel canal.

18. Muscles of the abdomen: classification, structure, functions.

19. Mediastinum: definition, classification according to the international anatomical nomenclature, topographic classification. Organs, vessels and nerves of the anterior, middle, posterior mediastinum.

20. Maxilla: parts, processes, their structure; describe and demonstrate on the preparation.

21. Vagina of the rectus abdominis muscle: walls, their structure. Linea alba of the abdomen: topography, structure. Inguinal canal: walls, rings, their structure, contents.

22. Pancreas: parts, their topography, relation to the peritoneum. Exocrine and endocrine parts of the pancreas, ways of excretion of the products of their activity.

23. Mandibula: parts, their structure; describe and demonstrate on the preparation.

24. Muscles of the head: classification. Masticatory muscles: structure, functions.

25. Temporal fossa, infratemporal and pterygopalatine fossa: borders, walls, connections; describe and demonstrate on the skull preparation.

26. Muscles of the head: classification. Mimic muscles: structure, functions.

27. Large intestine: parts, topography, wall structure, relation to the peritoneum.

28. Orbit: borders, walls, connections. Describe and demonstrate on the skull preparation.

29. Temporomandibular joint, structure, biomechanics of movements.

30. Nasal cavity: the boundaries of the entrance and exit of the nasal cavity, its walls, connections. Nasal meatuses: their structure, connections. Describe and demonstrate on the skull preparation.

31. Palate (hard, soft, bony), formation. Malformations of the palate.

32. Anatomical formations of the external base of the skull. Demonstrate on the preparation of the skull.

33. Permanent teeth. Formulas, developmental anomalies.

34. Nose: parts, structure, developmental abnormalities. Nasal cavity: nasal hiatus, their structure and connections. Paranasal sinuses: topography, connections, functions, age features.

35. The internal base of the skull: the boundaries, structure, connection of the anterior, middle, posterior cranial fossa.

36. Muscles of the thigh: classification, structure, functions.

37. Age and sex features of the structure of the bones of the skull, fonticles. Describe and demonstrate on the skull preparation.

38. Development of the oral cavity. Developmental defects. Parts of the oral cavity. Vestibule of the oral cavity. Oral cavity proper.

39. Parts and structure of tubular bones: name and demonstrate on preparations. Upper limb: its parts. Demonstrate the bones that form them.

40. Lower limb: its parts. Demonstrate the bones that form them.

41. Tongue: parts, structure, features of the mucous membrane of the tongue, functions of the tongue.

42. Hip bone: describe and demonstrate the structure of the preparations.

43. Teeth: parts of the tooth, tooth tissue, the surface of the tooth crown. Periodontist, periodontium, dental organ: definition. Permanent teeth: formula.

44. The pelvis as a whole: demonstrate its parts. Sex and age features of the pelvis. The main dimensions of the pelvis.

45. Deciduous teeth: their formula, timing of eruption of milk teeth.

46. Nasal meatuses, their formation and connection. Demonstrate on the preparations.

47. Salivary glands: classification. Small salivary glands, their topography, structure, functions. Parotid, sublingual, submandibular salivary glands, topography, structure, functions.

48. Chopar' joint (transverse tarsal joint) and Lisfranc's joints (tarsometatarsal joint), components, clinical significance.

49. Pharynx, topography, parts, their connections; lymphatic ring of the pharynx; structure of mucous, muscular and external membrane.

50. Joint: definition, main components of the joint: describe and demonstrate on preparations. Acsessory components of joints: name, describe and demonstrate on preparations.

51. Connection of ribs with vertebrae and sternum: demonstrate on preparations. Thorax: structure, age, sex and individual characteristics.

52. Mimic muscles. Features, topography, functions.

53. Types of joints of skull bones: continuous and discontinuous. Sources of the skull: their structure, functional significance, terms of ossification. Demonstrate on the preparation of the skull.

54. Liver: external structure; relief of diaphragmatic and visceral surfaces, topography, ligaments, relation to the peritoneum.

55. Temporomandibular joint: structure, classification, movements. Describe and demonstrate on the skull preparation.

56. Masticatory muscles; describe and demonstrate on the preparations the place of attachment.

57. Peritoneum: definition, general characteristics; peritoneal derivatives (ligaments, caps, mesenteries, their structure and formation), its contents.

58. Elbow joint: structure, classification, movements; describe and demonstrate on preparations.

59. Larynx: topography. Features of the wall structure of the tubular organs of the respiratory system.

60. Connection of pelvic bones: sacroiliac joint: structure, classification, movements; describe and demonstrate on preparations; pubic symphysis: structure; describe and demonstrate on preparations. Pelvic ligaments: describe and demonstrate on preparations. Name the foramens formed by the pelvic ligaments.

61. Trachea and bronchi: topography, wall structure.

62. Hip and knee joints: structure, classification, movements. Describe and demonstrate on the preparation.

63. Pleura: general characteristics, functions, pleural cavity, recesses. The boundaries of the pleural sacs.

64. Auxiliary apparatus of muscles: describe, demonstrate on the preparations. Muscle biomechanics, their effect on joints, the concept of the beginning and attachment of muscles, the moving and fixed points.

65. Kidneys: structure, topography, functions. Fixing apparatus of the kidney. Nephron - a structural and functional unit of the kidney, its components.

66. Fascia of the neck: topographic classification, describe the course of fascia and their origin; relation to muscles, internal organs. Identify interfascial spaces, their content and connections.

67. Ureter: parts, topography, constrictors, radiography of the ureter.

68. Topography of the neck (triangles, their boundaries, clinical significance). Describe and demonstrate on the preparation.

69. Temporal, pterygopalatine fossa of the skull, their boundaries, content, describe and demonstrate on the preparation.

70. Urinary bladder: parts, topography, wall structure, relation to the peritoneum. X-ray anatomy of the urinary bladder.

71. Female and male urethra: parts, their topography, narrowing and expansion.

72. Organs of the female genitsl system: topographic classification. Ovary: topography, ligaments, structure, functions.

73. Uterus: topography, position, uterine ligaments, relation to the peritoneum, parts, wall structure, functions.

74. Classification of internal organs. General plan of the structure of tubular organs.

75. Uterine tube: topography, parts, wall structure, relation to the peritoneum, functions. X-ray anatomy of the fallopian tubes. Vagina: topography, vault, wall structure.

76. Testis: topography, external and internal structure. The tunics of the testis.

77. Deferens duct: dimensions, parts, topography, wall structure, functions. Vesiculae seminales: topography, structure, functions. The ejaculatory duct: its formation.

78. The spermatic cord: its formation, topography, origion, tunics.

79. Prostate: parts, internal and external structure, functions.

80. Thyroid gland: topography, parts, structure, functions.

81. Thyroid glands: topography, structure, functions.

82. Suprarenal gland: topography, structure, functions.

83. Pituitary gland: topography, parts, functions.

84. Bones of the neurocranium; describe and demonstrate on the preparation.

85. Bone as an organ. Classification of bones. The main stages of bone development.

86. Pineal gland: topography, structure, functions.

87. Muscles of the head: topographic classification, structure, functions.

88. Lungs: topography, structure. Lobes, segments, lobules, acinus: structure, functions.

89. Muscles of the chest: classification, structure, functions. Aperture: topography, parts, functions.

90. Muscles of the abdomen: classification, structure, functions.

91. The mediastinum: definition, classification according to the international anatomical nomenclature. Organs, vessels and nerves of the anterior, middle, posterior mediastinum.

92. Stomach: topography, wall structure. X-ray of the stomach.

93. Spinal cord: topography, cervical and lumbar enlargements, external structure; localization of gray and white matter.

94. Nervous system: functions, classification. Neuron: definition, parts, structure of a neuron, morphological and functional classification of neurons.

95. General anatomy of arteries: anatomical and histological classification; functions of different groups of arteries. Patterns of distribution of arteries in the human body. Options for branching arteries.

96. The medulla oblongata: topography, external and internal structure; functional significance.

97. The fourth ventricle: development, topography, walls, connections. Rhomboid fossa: formation, boundaries, relief. Projection of cranial nerve nuclei.

98. Common carotid artery: topography, branches. External carotid artery: topography, classification of branches.

99. Cerebellum: structure, gray matter, its functional significance. Classification of parts of the cerebellum on the phylogenetic principle. Cerebellar peduncl, their composition.

100. Internal carotid artery: parts, branches, areas of blood supply.

101. Trigeminal nerve: general characteristics, nuclei, areas of innervation.

102. Subclavian artery: origion, topographic parts, branches.

103. Midbrain: development, boundaries, structure, parts. Gray and white matter.

104. Nervous pathways of the CNS: definition, classification.

105. Pons: boundaries, external and internal structure, topography, functional significance.

106. Arterial circle of the brain: topography, formation, functional significance.

107. Meninges of the spinal cord, the spaces between them, their contents. Fixing apparatus of the spinal cord.

108. White matter of the cerebral hemispheres: the internal capsule, its topography, parts, conductive pathways passing through each part.

109. Heart: the structure of the wall. Conductive system of the heart: nodes, bundles, their topography, functions.

110. The main stages of development of the central nervous system. Developmental defects.

111. Aorta: parts, topography. Thoracic aorta: topography, branches, areas of blood supply.

112. Brain development: sources; stage three and five cerebral vesicles, their derivatives. Anomalies of brain development.

113. Brainstem: development, parts.

114. Abdominal aorta: visceral branches, their classification, topography, areas of blood supply; paired visceral branches, topography, areas of blood supply.

115. Hypothalamus: parts, external structure; nuclei, their topography, functional significance. Hypothalamic-pituitary system.

116. The inferior vena cava: formation (roots), topography, classification of tributaries.

117. Basal ganglia: topography, parts, functional significance.

118. Heart: structure; chambers, heart valves.

119. Reticular formation: topography, structure (main nuclei), functional significance.

120. Common iliac artery: formation, topography, branches. Internal iliac artery: topography, classification of branches.

121. Metalamus: parts, their functional significance; epithalamus: parts, their functional significance.

122. Systemic circle of blood circulation. Pulmonary circle of blood circulation. Fetal circulation.

123. Innervation of the teeth of the maxilla.

124. Abdominal aorta: topography, classification of branches; parietal branches, their topography, areas of blood supply.

125. Sources of innervation of the teeth of the mandible.

126. Anterior jugular vein: formation, topography. Jugular venous arch: topography, formation. Brachiocephalic vein: formation, topography.

127. Limbic system: components, functional significance.

128. Vessels and nerves of the heart.

129. Spinal nerve: formation, topography, branches; correspondence to segments of a spinal cord.

130. Sources of blood supply to the masticatory muscles.

131. Diencephalon: parts. Thalamus: external structure, nuclei of the thalamus, their functional significance.

132. Internal jugular vein: formation, topography, classification of tributaries; areas of venous blood collection.

133. Maxillary nerve, topography of branches, areas of innervation.

134. Abdominal aorta: odd visceral branches, topography, areas of blood supply.

135. Cervical plexus: formation, topography, branches, areas of innervation.

136. Internal iliac artery: parietal branches, their topography, areas of blood supply.

137. Lumbar plexus: formation, topography, branches, areas of innervation.

138. Intrasystemic and intersystemic venous anastomoses: definition.

139. The nervous pathway of the trigeminal nerve .

140. Internal jugular vein: formation, topography; classification of tributaries. Intracranial and extracranial tributaries of the internal jugular vein.

141. Pyramidal nervous pathways: corticospinal tract.

142. Lymphatic system: general characteristics, functions. Lymphatic vessels: structure, topography, functions.

143. Somatosensory pathways of conscious sensitivity: the path of pain, temperature, tactile and conscious proprioceptive sensitivity from the head and neck.

144. Hemiazygos vein: formation, topography, classification of tributaries; visceral tributaries, areas of venous blood collection; parietal tributaries, areas of venous blood collection.

145. Lemniscus medialis: formation, composition, topography, functional significance.

146. Inferior vena cava: formation (roots), areas of venous blood collection; topography.

147. Pyramid nervous pathways: cortico-nuclear pathway.

148. XII pair of cranial nerves: general characteristics, nuclei, branches, areas of innervation.

149. Portal hepatic vein: formation (roots), tributaries, areas of venous blood collection; topography.

150. Organs of hematopoiesis and immune system (central and peripheral). Lymphatic (lymphoid) ring of the pharynx: the tonsils that form it, their topography, structure.

151. Skin. Derivates of the skin.

152. Lymphatic system: thoracic duct, its roots, topography, tributaries, place of confluence with the venous system; right lymphatic duct, its roots, topography, place of confluence with the venous system.

153. Anterior branches of spinal nerves: fiber composition; general patterns of structure and topography of the anterior branches of various spinal nerves.

154. Heart (pericardium): structure, cavities, recesses. Heart: projection of the heart on the anterior wall of the chest, areas of auscultation of the heart valves.

155. III pair of cranial nerves: development, general characteristics, nuclei, exit from the brain and skull, branches, areas of innervation. Ciliary node: topography, branches, areas of innervation.

156. Sources of blood supply to the teeth of maxilla, mandibila.

157. Ear: its parts. Anomalies and development options. External ear: its parts and structure.

158. The third ventricle: development, walls, connections; describe and demonstrate on preparation.

159. Hemiazygos vein: formation, topography, classification of tributaries; visceral and parietal tributaries, areas of venous blood collection.

160. IV pair of cranial nerves: development, general characteristics, nucleus, exit from the brain and skull, areas of innervation.

161. The telencephalon: parts, describe and demonstrate on preparation.

162. Portal hepatic vein: formation (roots), areas of venous blood collection; topography.

163. V pair of cranial nerves: development, general characteristics; branches, areas of innervation.

164. Hemispheres of the cerebrum: parts, describe and demonstrate on preparation.

165. Internal carotid artery: parts, branches, areas of blood supply.

166. Posterior branches of spinal nerves: fiber composition, topography, areas of innervation.

167. Corpus callosum, its topography, parts, functional significance.

168. VI pair of cranial nerves: development, general characteristics, nucleus, exit from the brain and skull, areas of innervation.

169. Rhinencephalon: parts, their components, functional significance; describe and demonstrate on preparation.

170. Anterior branches of the external carotid artery, topography, areas of blood supply.

171. Autonomic nervous system (autonomic nervous system): parts, functions, objects of innervation. Differences between somatic and autonomic nervous system.

172. Lateral ventricles: development, parts, topography, walls, connections; describe and demonstrate on preparation.

173. Posterior branches of the external carotid artery, topography, areas of blood supply.

174. VII pair of cranial nerves and intermediate nerve: development, general characteristics, nuclei, topography, branches, areas of innervation. Vegetative nodes of the head associated with the intermediate nerve: their roots, branches, areas of innervation.

175. Hemispheres of the cerebrum: surfaces, particles, their boundaries; describe and demonstrate on preparation.

176. Blood supply to the stomach.

177. IX pair of cranial nerves: development, general characteristics, nuclei, exit from the brain and skull, branches, areas of innervation.

178. Relief (sulci and gyri) of the upper lateral surface of the cerebral hemispheres; describe and demonstrate on the preparation.

179. Blood circulation of the fetus.

180. X pair of cranial nerves: development, general characteristics, nuclei, exit from the brain and skull, parts, their topography.

181. Relief (sulci and gyri) of the medial surface of the cerebral hemispheres; describe and demonstrate on the preparation.

182. Internal jugular vein, topography, tributaries.

183. Sacral and coccygeal plexus: formation, topography, classification of branches, areas of innervation.

184. Sympathetic part of the ANS.

185. Blood supply to the brain and spinal cord.

186. Meninges: name, describe and demonstrate on preparations. Differences between the dura mater and the spinal cord.

187. Spleen: structure, topography, functions.

188. Parasympathetic part of the ANS.

189. Dura mater of the brain: its processes and sinuses. Describe and demonstrate on preparation.

190. Diencephalon: parts (according to the International Anatomical Nomenclature - Ukrainian Standard); parts (for phylogenetic development).

191. Sources of venous blood supply to the sinuses of the dura mater. Ways of outflow of venous blood from sinuses of a dura mater of a brain. Describe and demonstrate on preparation.

192. XI pair of cranial nerves: development, general characteristics, nuclei, exit from the brain and skull, areas of innervation.

193. General plan of the structure of the motor cranial nerves. Draw a diagram.

194. Olfactory organ: structure, functions. The leading path of the olfactory analyzer.

195. General plan of the structure of sensitive cranial nerves. Draw a diagram.

196. Organ of taste: structure, functions.

197. General plan of the structure of mixed cranial nerves. Draw a diagram.

198. Arterial circle of the brain: topography, formation, functional significance.

199. Eye: parts, topography, structure, functions.

200. Describe the paths of sound oscillations. Draw a diagram, demonstrate on preparation.

201. Places to determine the pulse, show, justify, name the arteries.

202. Nervous pathways of the auditory analyzer. Nervous pathways of balance (vestibular apparatus).

List of practical skills for content modules №1 - №17 in the discipline "Human Anatomy"

Know and be able to show on preparations and determine:

Vertebra	Posterior cranial fossa
Cervical vertebrae	Sulcus superior sagital sinus (skull)
Thoracic vertebrae	Sulcus of the transverse sinus (skull)
Lumbar vertebrae	Sulcus of the sigmoid sinus (skull)
Sacrum	The external base of the skull
Ribs	Bony palate
Sternum	Orbital fossa
Frontal bone	Bone nasal cavity
Parietal bone	Scapula
Occipital bone	Clavicle
Sphenoid bone	Humerus
Temporal	Radius
Ethmoid bone	Ulna
Maxilla	Bones of the hand
Mandible	Carpal bones
Lower nasal concha	Metacarpal bones
Bony palate	Hip bone
Nasal bone	Ileac bone
Palate bone	Pubis
Zygomatic bone	Pelvis
Hyoid bone	Pelvic cavity
The vault of the skull	Greater pelvis
Temporal fossa	Lesser pelvis
Infratemporal fossa	Femur
Pterygopalatine fossa	Patella
Anterior cranial fossa	Tibia
Middle cranial fossa	Fibula
Carpal bones	Bones of the Foot
Metacarpal bones	Jejunum
Phalangeal bones	Ileum
Cranial connection	Duodenum
Cranial sutures	Caecum

The skull as whole	Appendix
Cranial synchondrosis	Colon
Temporomandibular joint	Rectum
Atlanto-occipital joint	Liver
Spinal column connection	Gallbladder
Thoracic connection	Common bile duct
Upper limb connection	Pancreas
Shoulder joint	Peritoneum
Elbow joint	Mesentery of the small intestine
Radial carpal joint	Mesentery of the transverse colon
Wrist joints	Mesentery of the appendix
Middle carpal joint	Mesentery of the sigmoid colon
Intercarpal joints	Omentum Majus
The metacarpophalangeal joints	Omentum Minus
Interphalangeal joints of the hand	Ligaments of the liver
Lower limb connection	Nose
Hip joint	Nasal cavity
Knee joint	Superior nasal meatus
Tibia	Middle nasal meatus
Ankle joint	Lower nasal concha
Transverse tarsal joint	The paranasal sinuses
Tarsometatarsal joint	Larynx
Metatarsophalangeal articulations	Epiglottis
Interphalangeal joints	Trachea
Muscles of the back	Bronchi
Muscles of the chest	Lungs
Diaphragm	Pleura
Muscles of the abdomen	Mediastinum
Linea alba	Kidney
Umbilical ring	Ureter (right, left)
Inguinal canal	Urinary bladder
Mimic muscles	Testis
Masticatory muscles	Spermatic cord
Muscles of the neck	Seminal vesicles
Submandibular triangle	The deferens duct
Carotyd triangle	Prostate
Omotracheal triangle	Penis
Omoclavicular triangle	The root of the penis
Muscles of the upper extremity	Male urethra
Muscles of the lower extremity	Scrotum
Vestibulum oris	Ovary
Oal cavity	Uterus
Palate	Uterine tube
Gums	Vagina
Teeth	External female genitals
Tongue	Female urethra
Oral glands	Perineum
Sublingual gland	Thyroid gland
Submandibular gland	Suprarenal gland (right, left)
Parotid gland	Pituitary gland
Pharynx	Thyroid gland
Esophagus	Thoracic gland (thymus)
Stomach	The pineal gland
Small intestine	

Duodenum	

Spinal cord	The medial and lower surfaces of the cerebral hemisphere
Brain	Corpus callosum
Brainstem	Vault
The medulla oblongata	Basic cores
Pons	Lateral ventricles
Midbrain	Hippocamp
The fourth ventricle	Ventricular orifice
Rhomboid fossa	The external structure of the telencephalon
Midbrain	The internal structure of the telencephalon
Blood supply of the brain	The anterior crus of the internal capsule
Intervertebral fossa	Knee of the internal capsule
Red nucleus	The posterior crus of the internal capsule
Substanthia nigra	Spinal cord
Cerebellum	Dura mater
Diencephalon	Sagital sinuses superior
Thalamus	Sagital sinus inferior
Epithalamus	Sinus rectus
Metalamus	Occipital sinus
Hypothalamus	Transverse sinus
The third ventricle	Confluens sinuses
Hemisphere of the cerebrum	Sigmoid sinus
The upper surface of the cerebrum	Cavernous sinus
Frontal lobe	Sphenopetrosal sinus
Parietal lobe	Superior petrosal sinus
Temporal lobe	Inferior petrosal sinus
Occipital lobe	Arachnoid mater
Heart	Pia mater
The basis of the heart	Portal hepatic vein
The apex of the heart	Superior mesenteric vein
Sternocostal surface of the heart	Inferior mesenteric vein
Diaphragmatic surface of the heart	Splenic vein
Pulmonary surface (right, left)	Gastric artery
Aorta (on the heart)	Carotid artery
Superior vena cava	Radial artery
Inferior vena cava	Ulnar artery
Pulmonary trunk	Subclavian vein
Right atrium	External iliac artery
Left atrium	Femoral artery
Atrial septum	Popliteal artery
Right ventricle	Anterior tibial artery
Left ventricle of the heart	Posterior tibial artery
Ventricular septum	
Endocardium	
Myocardium	
Epicardium	
Pericardium (core)	

Right coronary artery of the heart	External iliac vein
Coronary sinus	Femoral vein
Aorta	Greater saphenous vein
Brachiocephalic trunk	Deep femoral vein
Common carotid artery (right, left)	Lesser saphenous vein
External carotid artery	Spinal nerves
Superior thyroid artery	Cervical plexus
Lingual artery	Brachial plexus
Facial artery	The median nerve
Occipital artery	Ulnar nerve
Posterior auricular artery	Radial nerve
Ascending pharyngeal artery	Axillary nerve
Superficial temporal artery	Median cutaneous nerve
Maxillary artery	of the shoulder
Inferior cerebellar artery	The median cutaneous nerve
Middle carotid artery	of the forearm
Internal carotid artery	Intercostal nerves
Subclavian artery (right, left)	Lumbar plexus
Spinal artery	Ilio-hypogastric nerve
Basilar artery	Ileo-inguinal nerve
Posterior cerebral artery	Genitofemoral nerve
Internal thoracic artery	Lateral cutaneous nerve of the thigh
Thyrocervical trunk	Obturator nerve
Inferior thyroid artery	Femoral nerve
Thyrocervical trunk	The sacral plexus
Transverse artery of the neck	The sciatic nerve
Arterial circle of the brain	Tibial nerve
Internal jugular vein	Cranial nerves
Facial vein	Optic nerve (second pair)
Retromandibular vein	Oculomotor nerve (III pair)
External jugular vein	Trochlear nerve (IV pair)
Anterior jugular vein	Trigeminal nerve (V pair) and its node
Superior vena cava	Optic nerve (1 branch of V pair)
Brahiocephalic vein (right, left)	Maxillary nerve (2 branch V pair)
Thoracic aorta	Mandibular nerve (3 branch V pair)
Abdominal aorta	The lingual nerve
Common iliac artery	Inferior alveolar nerve
Internal iliac artery	The abducens nerve (VI pair)
Common iliac vein (right, left)	Facial and intermediate nerves (VII pair)
The inferior vena cava	
Internal iliac vein	Vestibulocochlear nerve (VIII pair)
Synpathetic trunk	Glossopharyngeal nerve (IX pair)
Nodes of the sympathetic trunk	Vagus nerve (X pair)
Internodal branches of the sympathetic trunk	Accessory nerve (XI pair)
	Hypoglossal nerve (XII pair)
Greater visceral nerve	
Lesser visceral nerve	

Form of final control of academic performance: semester final certification (exam). The system of current and final control

Control measures for assessing students' learning activities include current and final control of students' knowledge, skills and abilities.

Control measures are based on the principles of: compliance with higher education standards; use of a standardized and unified diagnostic system aimed at the application of knowledge; definition of evaluation criteria; objectivity and transparency of control technology.

The teacher must assess the student's performance in each class on a four-point (traditional) scale. Evaluation criteria are defined by the working curriculum in the discipline "Human Anatomy" in Table 1.

Assessment of success is integrated (all types of student work are evaluated both in preparation for the lesson and during the lesson) according to the criteria that are communicated to students at the beginning of the discipline. Conversion of the current grade, set on the traditional 4-point scale, to multi-point in each lesson is not carried out.

Table 1. Standardized generalized criteria for assessing the knowledge of higher education students in PSMU

On a 4-point scale	Assessment in ECTS	Evaluation criteria
5 (perfect)	A	The student shows special creative abilities, is able to acquire knowledge independently, without the help of the teacher finds and processes the necessary information, is able to use the acquired knowledge and skills for decision-making in unusual situations, convincingly argues answers, independently reveals own talents and inclinations, possesses not less than 90 % of knowledge from topics both during the survey and all types of control.
4 (good)	B	The student is fluent in the studied amount of material, applies it in practice, freely solves exercises and problems in standardized situations, independently corrects errors, the number of which is insignificant, has no less than 85% of knowledge on the topic both during the survey and all types of control.
	C	The student is able to compare, summarize, systematize information under the guidance of a scientific and pedagogical worker, in general, independently apply it in practice, control their own activities; to correct mistakes, among which there are significant ones, to choose arguments to confirm opinions, has at least 75% knowledge on the topic both during the survey, and all types of control.
3 (satisfactory)	D	The student reproduces a significant part of theoretical material, shows knowledge and understanding of the basic provisions with the help of a researcher can analyze educational material, correct errors, among which there are a significant number of significant, has at least 65% knowledge of the topic, and during the survey, and of all kinds control.
	E	The applicant has educational material at a level higher than the initial, a significant part of it reproduces on reproductive level. has at least 60% knowledge of the topic both during the survey and all types of control.

2 (unsatisfactory)	FX	The student has the material at the level of individual fragments that make up a small part of the material, has less than 60% knowledge of the topic as during the survey, and all types of control.
	F	The student has the material at the level of elementary recognition and reproduction of individual facts, elements, has less than 60% knowledge of the topic as during surveys, and all types of control.

The final control of mastering the module is carried out at the last practical lesson. Applicants for higher education who have scored the required minimum number of points during the current control (average grade point average 3.0 and above), do not have missed work lectures, practical classes, have mastered the topics for independent work within the module and met all the requirements of of each discipline "Human Anatomy", which are provided by the working curriculum of the discipline.

The hours provided in the working curriculum are used for final module controle. The final module controle is accepted by scientific and pedagogical (pedagogical) employees appointed by the head of the department. In order to objectively impartial assessment of knowledge of higher education students, we involve in the reception of final module controle research and teaching staff, departments that have not conducted practical classes in these academic groups in this category of students.

The final module controle score is evaluated in points and is not converted into a traditional 4-point score. The maximum number of final module controle points is 80 points. The minimum number of final module controle points at which the control is considered to be made is 50 points. The maximum number of points for the module is 200 points (up to 120 points for the current performance) per tab. №2.

Table №2. Unified table of correspondence of points for current performance scores for the final module control, exam, and the traditional four-point score

Average score for current performance (A)	Points for current success in the module (A * 24)	Points for final module control from the module	Points for the module and / or exam (A*24 + A* 16)	Category ECTS	By 4-point scale
1	2	3	4	5	6
2	48	32	80		
2,1	50	34	84		
2,15	52	34	86		
2.2	53	35	88		
2,25	54	36	90		
2,3	55	37	92		
2,35	56	38	94		
2.4	58	38	96	**F**	
2,45	59	39	98	FX	**2**
2.5	60	40	100		
2,55	61	41	102		unsatisfactorily
2,6	62	42	104		
2,65	64	42	106		
2,7	65	43	108		
2,75	66	44	110		
2,8	67	45	112		
2,85	68	46	114		
2,9	70	46	116		
2,95	71	47	118		
3	72	50*	122		
3,05	73	50*	123		

3,1	74	50	124	***E***	
3,15	76	50	126		
3,2	77	51	128		
3,25	78	52	130		
3,3	79	53	132		3
3,35	80	54	134		satisfactorily
3,4	82	54	136	**D**	
3,45	83	55	138		
3,5	84	56	140		
3,55	85	57	142		
3,6	86	58	144		
3,65	88	58	146		
3,7	89	59	148		
1	2	3	4	5	6
3,75	90	60	150		
3.8	91	61	152		
3,85	92	62	154		
3.9	94	62	156		
3,95	95	63	158	**C**	
4	96	64	160		
4,05	97	65	162		4
4,1	98	66	164		good
4,15	100	66	166		
4,2	101	67	168		
4.25	102	68	170		
4.3	103	69	172		
4,35	104	70	174		
4,4	106	70	176	**B**	
4.45	107	71	178		
4,5	108	72	180		
4.55	109	73	182		
4,6	110	74	184		
4.65	112	74	186		
4,7	113	75	188	**A**	**5**
4,75	1 14	76	190		perfectly
4,8	1 15	77	192		
4,85	1 16	78	194		
4,9	118	78	196		
4,95	119	79	198		
5	120	80	200		

Semester final certification (exam). Applicants for higher education are admitted to the SFA (exam) who have not completed missed classes, scored a minimum score of at least 72 (which corresponds to an average score of 3.0 for current performance), passed all the final module control in the discipline (except the last and fulfilled all the requirements of the discipline, which are provided by the working curriculum of the discipline: positive assessments of content modules, admission to the final module control in the form of test control, etc.), fulfilled financial obligations under agreements (for training, living in dormitory, etc.), which was marked in the individual curriculum for admission to the session by the dean (deputy dean) of the faculty.

The exam is conducted in one day in two stages: computer testing and theoretical component. At the first stage, on the day of the exam in the departmental computer class, students of higher education are tested on 20 questions (time for performance - 20 minutes) from the academic base of CTE-1 for the relevant discipline. Each correct answer for the test task when compiling the computer control is counted as 1 point (maximum in the amount for the first stage, respectively 20 points). The

result of the computer control by the student of higher education is not a reason for not admitting him to the theoretical part of the exam.

The exam card contains three specific basic theoretical (practice-oriented) questions, formulated in such a way that the reference answer of the higher education applicant to each approximately lasts up to 3-5 minutes. The questions comprise the most important sections of the working curriculum, which are sufficiently comprised in the literature sources recommended as the main (basic) in the study of the discipline "Human Anatomy".

Exam cards are approved by the Academic Council of the International Faculty, signed by the dean or his deputy. It is not allowed to perform any additional tasks to the cards on the exam. Each question of the exam card is evaluated within 0-20 points. Based on the computer control and the theoretical part of the exam, the student is given a total score from 0 to 80 points, the conversion of points into the traditional score is not carried out. In case of violation by the applicant of higher education of the rules of academic integrity (p. 2.2.5. Rules of Procedure) during the exam or final module control, the results are canceled, the student for the answer is graded "unsatisfactory".

In case of disagreement of the applicant of higher education with the grade obtained for the exam, the applicant of higher education has the right to file an appeal (in accordance with the "Regulations on the appeal of the results of final control of knowledge of higher education applicants"). The applicants of higher education who during the study of the discipline "Human Anatomy" (except for CTE and GSCE components) had an average score of 4.50 to 5.0 are exempt from the exam and automatically (by agreement) receive a final grade in accordance with Annex 1, while the presence of the applicant at the exam is mandatory. In case of disagreement with the assessment, the specified category of applicants of higher education takes the exam according to the general rules.

Incentive points may be added to the total number of points in the discipline.
The maximum number is 20 points. The sum of points in the discipline and incentive points should not exceed 200 points.
Incentive points are awarded for:
- work in scientific student groups of the departments;
- participation in the scientific work of the departments;
- participation in discipline-specific competitions:
- presentations at scientific and practical conferences,
seminars, congresses and publications of these forums;
- authorship or co-authorship of articles published in scientific journals, declarative patents.

Bonus points are awarded to higher education students upon completion of the discipline, after discussion at the departmental meeting, upon the submission of the Head of the Department to the Dean of the Faculty and are subject to mandatory approval by the relevant Academic Council of the Faculty.

The right to recognition of learning outcomes in non-formal and informal education applies to students at all levels of higher education. In this case, the recognition of results is carried out in the semester preceding the semester in which, according to the curriculum of a particular educational programme (hereinafter referred to as the EP), the study of a particular discipline is provided. The restriction is made taking into account the likelihood of the applicant not confirming their learning outcomes in non-formal education. The University may recognise learning outcomes in non-formal and informal education in the amount of no more than 10% of the total volume of the EPP ‘Dentistry’.

The volume of advanced training through non-formal or informal education is credited in accordance with recognised learning outcomes, but not more than 30 hours or one ECTS credit per year. A higher education student applies to the rector of the university with a request for recognition of learning outcomes

in non-formal education. The application may be accompanied by any documents (certificates, certificates, etc.) that confirm the skills that the applicant has acquired during his or her studies. To recognise the results of non-formal education, a specialised commission is established by order of the rector. It consists of the dean of the faculty, the guarantor of the educational programme in which the applicant is studying, and academic staff who teach human anatomy.

The professional commission determines the method of assessment of learning outcomes in accordance with the curriculum. The applicant is acquainted with the programme of the discipline and the list of questions to be submitted for the final assessment. The applicant is also acquainted with the assessment criteria and the rules for appealing the results.

The professional commission gives 10 working days to prepare the applicant for the final control (for each discipline) and 20 working days to write a written paper (if any). The final control takes place in the form of an exam. The professional commission assigns the final grade according to the ECTS scale. If the applicant has received less than 60 points, the results of non-formal and informal education are not credited to him/her. Based on the results of the assessment, the professional commission

draws up a protocol containing a conclusion for the dean's office on the enrolment or non-enrolment of the relevant discipline. When re-enrolling in disciplines in accordance with the decision of the professional commission, the following information is entered in the student's academic record: the name of the discipline, the total number of hours/credits, the grade and the reason for re-enrolment (protocol number).

The applicant is exempted from studying the re-credited discipline in the next semester. In case of a negative conclusion of the professional commission on the recognition of learning outcomes, the applicant has the right to appeal to the rector of the university.

Teaching methods

1. Methods of organising and carrying out educational and cognitive activities.

2. Methods of activation, stimulation and motivation of educational and cognitive activity - active methods - problematic presentation, partially search, research, heuristic, case studies, business games, conversations, discussions.

3. Methods of control and self-control over the effectiveness of educational and cognitive activity.

Control methods

- oral control (oral examination);
- written control;
- test control;
- programmed control;
- practical inspection.

Control forms.

During classes at the Department of Human Anatomy, teachers use individual and frontal tests of knowledge, skills and abilities of students, as well as final forms of control.

The final forms of control are presented by semester final assessment.

Methodological support

1. Plans of lectures, practical classes and independent work of students.
2. Methodical development of lectures on the discipline.
3. Methodical instructions for practical classes for students.
4. Methodical materials that provide self-directed work of students.
5. Test and control tasks for practical classes.
6. Questions and tasks to control the mastering of the section.
7. List of questions for the exam, tasks to test practical skills during the exam.
8. Bony and wet preparations.
9. Multimedia presentations to all sections.

Recommended reading

Basic (available at the library of PSMU)

1. Human Anatomy. In three volumes. Volume 1 / Edited by V.G. Koveshnikov. – 2 nd ed., corr.and suppl. - Lviv: «Magnolia 2006», 2021. – 328p.
2. Human Anatomy. In three volumes. Volume 2 / Edited by V.G. Koveshnikov. - 2 nd ed., corr.and suppl. - Lviv: «Magnolia 2006», 2021. – 248p.
3. Human Anatomy. In three volumes. Volume 3 / Edited by V.G. Koveshnikov. - 2 nd ed., corr.and suppl. - Lviv: «Magnolia 2006», 2021. – 384p.

4. Human Anatomy: textbook / Cherkasov V.G., Herasymiuk I.Ye., Holovatskyi A.S., Kovalchuk O.I. [et al.]. – Vinnytsia Nova Knyha, 2018. – 464 p.

Supplementary

1. Gray′s anatomy for students / Richard L. Drake, A. Wayne Vogl, and Adam W. M. Mitchell; illustrations by Richard M. Tibbitts and Paul E. Richardson; photographs by Ansell Horn. – 2nd ed. 2012 – 1103p.
2. Sobotta Atlas of Human Anatomy / Edited by R. Putz and R. Pabst, 14th ed. – Elsevier GmbH, Munich, 2008 . – 895p.
3. Grant′s atlas of anatomy ⁄ Anne M.R. Agur, Arthur F. Dalley II, 14th ed. - Baltimore: Wolters Kluver, 2017. – 864 p.
4. Martini Frederic H. Martini′s atlas of the human body, 8th ed. – Pearson Education, 2009. – 250p.
5. Atlas of Human Anatomy / Frank H. Netter; 7nd ed. // Elsevier Inc, 2019. – 548p.

Information resources

1. Inner Body : [educational site]. - Access mode : http://www.innerbody.com/ Anatomy Atlases is curated by Michael P. D'Alessandro, M.D. and Ronald A. Bergman, Ph.D. - Access mode : http://www.anatomyatlases.org/
2. Acland's Video Atlas of Human Anatomy / Wolters Kluwer. - Access mode : https://aclandanatomy.com/
3. 3d anatomy atlas. Human anatomy physiology. Human body anatomy 3d. Anatomy physiology flash cards. Atlas of human anatomy. Gray s anatomy. - Access mode : http://www.anatomatlas.com/
4. About Healthline Body Maps : interactive visual search tool/Healthline Media. - Access mode :http://www.healthline.com/human-body-maps/male
5. Zygote Body: 3D anatomical models of the human body / Zygote Media Group. - Access mode : www.zygotebody.com

Developers

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