

**SYLLABUS OF THE EDUCATIONAL COMPONENT
HUMAN ANATOMY**

Speciality: **222 "Medicine"**
Educational and professional program: **Medicine**
Component code in the educational program: **MC 7**
Higher education level: **second (master's) degree**
Form of education: **full-time**
Year of study: **1st**
Semester(s): **I (autumn), II (spring)**
Type of educational component: **mandatory**
Academic year: **2024-2025**

Volume: **7.5 credits ECTS (225 hours)**
Training sessions: **lectures, practical classes**
Final control: **credit**
Prerequisites: **a course of Biology of general education in high school**

Department/Unit: **Department of Human Anatomy, Clinical Anatomy and Operative Surgery,**
12 Nezalezhnosti Avenue

Head of the educational component: **Assoc. Prof. Olga Sazonova, om.sazonova@knmu.edu.ua**

Page of the educational component in the Distance Learning System of KhNMU (Moodle):

<https://distance.knmu.edu.ua/course/view.php?id=4176>

<https://distance.knmu.edu.ua/course/view.php?id=4508>

DESCRIPTION OF THE EDUCATIONAL COMPONENT

The study of the educational component "Human Anatomy" for physicians is a classical model of a university course adapted to the needs of medicine, which provides for each student to acquire knowledge in the world of natural science concepts about the structure and functions of the human body as a whole, the ability to use the acquired knowledge in the further study of other fundamental sciences of medicine, and in the practical activities of a doctor.

PURPOSE OF THE COURSE: acquisition by each student of knowledge of anatomy in the world of natural science ideas about the structure and functions of the human body as a whole, the ability to use the acquired knowledge in the further study of other fundamental sciences of medicine, and in the practical activities of a doctor.

LEARNING OUTCOMES: The training of a future medical specialist aims to develop a competent, highly professional, and morally mature specialist capable of effectively applying their knowledge and skills in healthcare.

1. **Acquisition of a system of knowledge and competencies.**

Ensuring the acquisition of deep general, special, fundamental and professionally oriented knowledge, skills and abilities necessary for the high-quality performance of typical professional tasks related to activities in the medical field in the relevant position.

2. **Understanding the psychophysiological foundations of human health.**

Acquiring knowledge about the psychophysiological characteristics of a person, the principles of preserving and strengthening health, disease prevention, treatment methods, as well as the laws of forming and maintaining the health of the population.

3. **Professional assessment of the patient's condition.**

Formation of the ability to comprehensively evaluate the results of a patient interview, physical examination, laboratory and instrumental studies to determine the state of health and timely detection of pathological changes.

4. **Fostering ethical and moral responsibility.**

Formation of a specialist with high professional and personal qualities who adheres to the principles of humanism, professional ethics, and the provisions of the doctor's code of ethics.

CONTENT OF THE EDUCATIONAL COMPONENT**List of lecture topics (20 hours):**

1. Human anatomy - as a science. World, Ukrainian and Kharkiv anatomical schools. Functional osteology. The doctrine of the connection of bones. Functional arthrology.
2. Functional myology.
3. Functional anatomy of the digestive system. Peritoneum.
4. Functional anatomy of the respiratory system. Pleura. Mediastinum. General anatomy of the endocrine and immune systems.
5. Functional anatomy of the cardiovascular system. Fetal circulation. Functional anatomy of the lymphatic system.
6. General and functional anatomy of the urinary organs. General and functional anatomy of the male and female genital systems. Perineum.
7. The doctrine of the nervous system. Functional anatomy of the spinal cord. Obolon.
8. Functional anatomy of the brain. Obolon.
9. Leading pathways of the brain and spinal cord.
10. Cranial nerves and anatomy of the senses

List of topics of practical classes (120 hours):

1. Organization of the educational process at the Human Anatomy department. Subject and tasks of anatomy. Research methods in anatomy. The main directions of modern anatomy development. Anatomical nomenclature. Axes and planes of the human body. Bone as an organ. Classification of bones. Test and situational tasks on the topic.
2. General characteristics of the vertebral column. General features of vertebrae. Features of the cervical, thoracic, lumbar vertebrae, sacrum, coccyx. Vertebral column as a whole. Anomalies of the vertebral development. Classification of ribs. The structure of the ribs and sternum. Thoracic cage as a whole. Test and situational tasks on the topic.
3. The bones of the shoulder girdle. Bones of the free part of the upper limb. The bones of the pelvic girdle. The pelvis as a whole (openings, diameters, conjugates, etc.). Bones of the free part of the lower limb. Test and situational tasks on the topic.
4. Anatomy of the skull I. Frontal, parietal, occipital, sphenoid, temporal bones. Temporal bone canals. Bones of the cerebral skull (Neurocranium). Test and situational tasks on the topic.
5. Anatomy of the skull II. Ethmoid bone, maxilla, mandible, vomer, zygomatic, palatine, lacrimal, hyoid bone. Bones of the facial skull (Viscerocranium). Orbital cavity, bony nasal cavity, paranasal sinuses, bony palate. Test and situational tasks on the topic.
6. Anatomy of the skull III. External and internal base of the skull. Anterior, middle and posterior cranial fossae and their communications. Temporal, infratemporal, pterygopalatine fossae. Age and sex features of the skull structure. Variations and anomalies of skull bones development. Test and situational tasks on the topic.
7. Arthrology. The concept of the joint. Classifications of the joints. Basic and auxiliary elements of the joints. Joint biomechanics. Development and age features of the joints. Tests and situation tasks on the topic.
8. Articulations of skull bones. Age features of skull bones articulations: fontanelles, their types, structure, terms of ossification. Atlanto-occipital joint. Articulations of the vertebral column. Articulations of thoracic cage. Articulations of the shoulder and pelvic girdles. Test and situational tasks on the topic.
9. Articulations of the free part of the upper limb bones. Articulations of the free part of the lower extremity bones. Test and situational tasks on the topic.
10. Concluding class: "Osteology. Arthrology"
11. Introduction to myology. Muscle as an organ. Muscle classifications. Auxiliary muscle apparatus. Muscles and fascia of the chest. Diaphragm. Test and situational tasks on the topic.
12. Muscles and fascia of the back. Test and situational tasks on the topic.

13. Abdominal muscles and fascia. White line of the abdomen. Topography of the abdomen. The sheath of the rectus abdominis muscle. Inguinal canal. Test and situational tasks on the topic.
14. Muscles of the head. Fascia and topography of the head. Test and situational tasks on the topic.
15. Neck muscles. Fascia and topography of the neck (classification of fascia, triangles of the neck, regions of the neck, interscalene space). Test and situational tasks on the topic.
16. Muscles of the upper extremity. Fascia and topography of the upper limb (axillary and cubital fossa, canals, grooves). Test and situational tasks on the topic.
17. Muscles of the lower extremity. Fascia and topography of the lower limb (femoral triangle, popliteal fossa, canals). Test and situational tasks on the topic.
18. Concluding class "Myology".
19. Anatomy of the oral cavity and its derivatives: tongue, palate, teeth, pharynx, salivary glands. Anatomy of the pharynx. Test and situational tasks on the topic.
20. Anatomy of the digestive tract (esophagus, stomach, small and large intestine). Test and situational tasks on the topic.
21. Anatomy of large digestive glands (liver and pancreas). Anatomy of the gallbladder and bile ducts. Test and situational tasks on the topic.
22. Regions of the anterior abdominal wall. Projection of abdominal organs on the regions of the abdominal wall. Anatomy of the peritoneum and its derivatives. Test and situational tasks on the topic.
23. Anatomy of the external nose, nasal cavity, larynx. Test and situational tasks on the topic.
24. Anatomy of the trachea, main bronchi. Anatomy of the lungs and pleura. The mediastinum (classifications, boundaries, contents). Test and situational tasks on the topic.
25. Anatomy of the urinary system (kidneys, ureters, urinary bladder, urethra). Test and situational tasks on the topic.
26. Anatomy of the male genitalia. Male perineum (borders, layers). Test and situational tasks on the topic.
27. Anatomy of the mammary gland. Anatomy of female genitals. Female perineum (borders, layers). Test and situational tasks on the topic.
28. Anatomy of the heart: Topography of the heart. General structure of the heart. Greater and lesser blood circulation, structure of heart's wall, chambers of the heart, valves, blood supply of the heart, nerves of the heart. Conducting system of the heart. Pericardium (structure, cavity, contents, sinuses). Fetal circulation. Test and situational tasks on the topic.
29. Anatomy of the endocrine system: thyroid, parathyroid, adrenal glands. Endocrine part of the pancreas, pituitary gland, pineal gland. Anatomy of organs and formations of the immune system: thymus, bone marrow, spleen, tonsils. Lymphatic system. General plan of the structure. The main lymphatic ducts. Test and situational tasks on the topic.
30. Concluding class "Splanchnology. Anatomy of the endocrine and immune systems. Lymphatic system". Computer testing on the basis of KROK-1 (materials of the I and II semesters).

List of topics of independent work of the student (85 hours)

1. Describe the main stages of anatomy: history of anatomy development in ancient times; history of anatomy development in the Renaissance; history of development of Ukrainian anatomical schools up to the XX century; history of development of Ukrainian anatomical schools in the XX - XXI centuries.
2. Master the skill to apply planes and axes to describe anatomical objects.
3. Master the basics of anthropometric description of the skull, describe the sexual and individual features of the structure of the skull; describe the age features of the structure of the skull
4. Master the ability to draw and to demonstrate the structure of the bones of the vertebrae, ribs, sternum, the structure of the bones of the upper and lower extremities
5. Master the ability to draw patterns of connection of bones: skull, vertebrae, ribs, upper and lower extremities.
6. Master the skill to demonstrate on preparations the connections between bones
7. Master the ability to demonstrate on preparations: muscles of the trunk; head; neck; upper and lower extremities.

8. Preparing a review of the scientific literature or conducting research (optional): The development of the skull in ontogenesis; Variants and anomalies of skull development; Development of bone joints in phylogeny and ontogenesis; Variants and anomalies of development of the upper and lower limbs; Variants and anomalies of skeletal muscle development.

9. Master the ability to demonstrate the structure of preparations: organs of the digestive system; esophagus, stomach, liver, pancreas, small and large intestine

10. Master the skill to draw the course of the peritoneum in the abdominal cavity and pelvic cavity.

11. Master the basics of anthropometric description of the external structure of the respiratory system.

12. Master the skill to read X-rays of the digestive and respiratory systems.

13. Master the ability to demonstrate the structure of the heart, walls of the heart, chambers, blood vessels, leading pathways of the heart on preparations

The IWS is aimed at deepening and consolidating the theoretical knowledge gained during classroom training and contributing to the formation of professional competencies. The results of the IWS are subject to control and are included in the final control of knowledge.

Consultations: online, according to the department's schedule, with invitations sent to corporate email and added to Google Calendar.

Teaching methods: lectures in video or live broadcast format; use of presentations; interactive diagrams to visualize organ structure; simulators of organs and systems to practice organ and system structure; use of tests and tasks with instant knowledge testing.

EVALUATION

Current Learning Activities (CLA). Assessment of the success of education seekers is carried out in accordance with the Instructions for assessing the educational activities of higher education seekers at KhNMU (https://knmu.edu.ua/doc_block_type/instrukcziyi-navchalnogo-proczesu/). When assessing the mastery of each academic topic in the educational component (CEA) and the final lesson, the applicant is graded on a traditional 4-point scale: "excellent", "good", "satisfactory", and "unsatisfactory".

The final score for (CEA) and final lessons (CC) is determined as the arithmetic mean of traditional grades for each lesson and CC, rounded to 2 decimal places and converted into a multi-point scale according to the tables.

Unsatisfactory grades are worked out in accordance with the Regulations on the procedure for working out academic classes by students of KhNMU (chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://knmu.edu.ua/wp-content/uploads/2021/05/pol_por-vidprac-zaniat.pdf).

Individual tasks (IT). Individual student tasks (hereinafter referred to as IST) are not a mandatory element; however, if the student wishes, they can be completed and evaluated in ECTS points (no more than 10), which are added to the sum of points scored for current educational activities. At the department meeting, a list of individual tasks (participation in student conferences and specialized Olympiads, preparation of analytical reviews with presentations and plagiarism checks) was approved, specifying the number of points for their completion, which can be used as incentives (no more than 10).

Final control. The final lesson (hereinafter referred to as the CC) must be held in accordance with the working curriculum for the educational component during the semester according to the schedule, during classes. The CC is accepted by the academic group's teacher. The department has provided the following materials for preparation for the CC on the MOODLE platform: a list of theoretical questions, a list of practical skills, test tasks, criteria for assessing the knowledge and skills of applicants.

Grade in subject (GS). The credit is considered passed if a sufficient number of points in practical and final classes is obtained, ranging from 70 to 120.

Appealing the results of the final control is carried out in accordance with the procedure established in KhNMU (https://knmu.edu.ua/wp-content/uploads/2021/05/polog_apel_kontrol.pdf).

POLICIES OF THE EDUCATIONAL COMPONENT

Recommendations for working on the course: actively participate in all types of work in classes, devote time every day to independent preparation and completion of tasks, do not be shy about asking questions during classes, attend consultations, submit assignments on time, and complete all forms of knowledge control.

Attending classes. Regular attendance at classes is a prerequisite for mastering the material. The student must be present at all lectures and practical classes. Missing classes without a good reason is not allowed and may affect the CEA. In case of absence for good reason, the student must independently work through the missed material and work through the classes with the teacher of his group, or the teacher on duty according to the schedule and through the ACS record. Missed classes are made up in accordance with the Regulations on the procedure for making up classes by students of KhNMU (chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://knmu.edu.ua/wp-content/uploads/2021/05/pol_por-vidprac-zaniat.pdf).

Academic integrity. KhNMU stands on the position of zero tolerance for manifestations of academic dishonesty. Any violations of the principles of academic integrity entail responsibility in accordance with the procedure established by KhNMU (https://knmu.edu.ua/wp-content/uploads/2021/05/polog_ad-1.pdf).

Use of electronic gadgets and artificial intelligence tools. During classes, it is allowed to use electronic devices (laptops, tablets, smartphones) only for educational purposes - to take notes, search for educational information or perform tasks related to the topic of the class. Using gadgets in a way that distracts from the educational process or interferes with other participants is prohibited. The use of artificial intelligence tools is allowed only to assist in learning - to search, summarize or verify information, prepare for classes, etc. It is prohibited to use AI to perform individual or test work instead of one's own intellectual activity.

Policy on persons with special educational needs. The educational process is ensured by adhering to the principles of equality and accessibility. Students with special educational needs are provided with conditions for full participation in education, taking into account individual capabilities, health status, and specific needs.

Teacher Response Time: 24 hours.

Technical requirements for the course:

- access to a computer, laptop, tablet or smartphone
- Corporate Google account with your own photo
- skills in working with Google Workspace (Google Meet, Docs, Sheets, Slides, Forms) and Moodle

Technical support: ASM (ev.shevtsov@knmu.edu.ua), Google (tehotdelknmu@gmail.com), Moodle (al.korol@knmu.edu.ua)

RECOMMENDED SOURCES

1. Human Anatomy: textbook: in 3 volumes / A. S. Holovatsky, V. G. Cherkasov, M. R. Sapin [and others]. – 7th ed., revised. – Vinnytsia: Nova Knyga, 2019.
2. Human Anatomy: textbook / [Kryvko Yu. Ya., Cherkasov V. G., Kravchuk S. Yu. Sopneva N. B. and others]; edited by: Prof. Kryvka Yu. Ya., Prof. Cherkasova V. G. – Vinnytsia: Nova Knyga, 2020. – 448p.
3. Human Anatomy: Textbook / S. M. Bilash, M. M. Koptev, O. M. Pronina, O. M. Belyaeva ... - Kyiv: "Medicine", 2023. - 279 p.
4. Extbooks and Reference Books Gray, H. Gray's Anatomy for Students - 4th edition, Elsevier, 2020. - 1072 p.

5. Rohen, JW, Yokochi, C., Lütjen-Drecoll, E. Color Atlas of Anatomy: A Photographic Study of the Human Body – 8th edition, Wolters Kluwer, 2021.
6. Human Anatomy, Global Edition / Elaine Marieb, John Mallatt, Patricia Brady – Pearson, edition ~2019–2020.
7. Netter, F.H. Atlas of Human Anatomy - 7th edition, Elsevier, 2019. - 608 p.

Head of Department of , Prof.

Ihor KOLISNYK