



CD 8.5.1 DISCIPLINE CURRICULUM

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FACULTY OF MEDICINE
STUDY PROGRAM 0912.1 MEDICINE
DEPARTMENT OF HUMAN ANATOMY

APPROVED

at the meeting of the Commission for Quality Assurance and Evaluation of the Curriculum Faculty of Medicine

Minutes No. 6 of 27.02.18

Chairman, PhD, associate professor

Suman Serghei

(signature)

APPROVED

at the Council meeting of the Faculty of Medicine

Minutes No. 4 of 20.09.18

Dean of Faculty, PhD, associate professor

Bețiu Mircea

(signature)

APPROVED

at the meeting of the chair of Human Anatomy
Minutes No.02 of 27.09.2017

Head of chair, PhD, professor

Catereniuc Ilia

(signature)

SYLLABUS

DISCIPLINE HUMAN ANATOMY

Integrated studies

Type of course: **Compulsory**

Chisinau, 2017



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I. INTRODUCTION

- **General presentation of the discipline: place and role of the discipline in the formation of the specific competences of the professional / specialty training program**

Human Anatomy is an important component of preclinical education, it is one of the oldest fundamental sciences of medical education, which can also be defined as science of the material substrate of the life and health.

Having as the object of research the living human body, Anatomy is an important component of preclinical education that supplies the student with information on the structure of the human body in phylogenesis and ontogenesis, the morphological variability of its structures, development anomalies, age, gender and individual specific features.

The human anatomy course studies the structure of the human body and its component parts at the macro- and mesoscopic levels, as well as their changes conditioned by interaction and interdependence with the other biological systems, which have influenced the formation of the *Homo sapiens* during evolution.

- **Mission of the curriculum (aim) in professional training**

Human anatomy aims to study the morphofunctional features of organs and organ systems in different periods of postnatal development, and to use that knowledge in learning of the basic and clinical disciplines, prevent various diseases, diagnose and treat them.

One of the main objectives of the course is to study the anatomy of the living person and to understand its educational role in professional training.

- **Languages of the course:** English.
- **Beneficiaries:** First year students, Faculty of Medicine no. 2, specialty Medicine.

II. MANAGEMENT OF THE DISCIPLINE

Code of the discipline		F.01.O.001 / F.02.O.012	
Name of the discipline		Human Anatomy	
Person(s) in charge of the discipline		PhD, university professor Ilia Catereniuc MD, assistant professor, Anastasia Bendelic	
Year	I	Semester/Semesters	I/II
Total number of hours – 360 <i>including:</i>			Sem. I – 180 Sem. II – 180
Lectures	Sem. I – 17 Sem. II – 17	Practical/laboratory hours	Sem. I – 51 Sem. II – 51
Seminars	Sem. I – 51 Sem. II – 51	Self-training	Sem. I – 61 Sem. II – 61
Clinical internship			-
Form of assessment	E/E	Number of credits	Sem. I – 6 Sem. II – 6



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III. TRAINING AIMS WITHIN THE DISCIPLINE

At the end of the course the student will be able:

✓ at the level of knowledge and understanding to:

- form clear and accurate ideas about the human anatomy, its evolution and branches, its role and place among the basic and clinical medical disciplines and about anatomy on a living person;
 - know traditional and modern methods of anatomical examination;
 - possess and reproduce information about the human body as a whole unit, its relationships with the environment, its constituent elements (tissues, organs, systems of organs, apparatuses);
 - demonstrate knowledge about the essential stages of development of the body, ontogenesis and phylogenesis of organs and systems of organs;
 - comprehend and reproduce general definitions about the norm, variants of norm, abnormalities and their applied significance;
- possess and reproduce information about the human body proportions, constitutional types, their applied significance; about the general structural features of the organs and systems of organs, the individual, age, and gender specific features of all anatomical formations;
- possess and reproduce information about individual, age and gender specific features of all anatomical formations at the macro- and mesoscopic levels; about their functions, topography, radiography, ultrasound, MRI, endoscopic methods, and projection on a living person;
 - know International Anatomical Terminology elaborated by FICAT (Federative International Committee on Anatomical Terminology, 1998).

✓ at the application level:

- identify anatomical formations and arrange them into anatomical position;
- demonstrate the structural aspects of the body regions (on the dissected corpse), anatomical samples, molds, etc.;
- identify anatomical structures on radiological (radiograms, tomography) and sonographic images, images obtained by MRI;
- determine the bony, muscles, joints, vessels and nerves landmarks of various body regions on a living person;
- demonstrate on a living person the projection of the viscera, blood vessels and nerves;
- palpate on a living person the landmarks of bones, joints and muscles;
- palpate the pulse on the arteries of the head, neck and limbs and indicate their points of compression in order to stop the bleeding;
- reproduce schemes referring to the structure, topography, projection and classification of anatomical formations;
- solve case based problems and tests on the structure, topography, functions, and aspects of anatomical formations on alive person;
- possess abilities of dissection.

✓ at the integration level:

- evaluate the place and role of human anatomy in the preclinical training of the future physician;
- appreciate the importance of knowledge in the field of human anatomy in order to acquire clinical disciplines and to become aware of their applicability in the diagnosis and treatment of diseases;
- use information technologies to obtain, evaluate, store, produce, present and share information with colleagues in individual and group work;
- implement the gained knowledge in the research activity;
- to acquire learning abilities, that will contribute to the management of the professional activity.



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IV. PROVISIONAL TERMS AND CONDITIONS

Anatomy is a fundamental science in medical education, studying the human body and its ontogenetic development, which is closely related to the environmental changes and daily activities of each person.

Anatomy becomes the science of all living forms by using the methods, which come to support each physician (palpation, percussion, radiological, endoscopic, CT, ultrasonographic methods and others), and it is the basis for other disciplines of medical education, including the vocabulary of over 5000 terms, on which all the other sciences in medical education are based.

Modern medicine does not require from nowadays anatomy an abstract of human body structure and its shape, but real data about the structure of an individual. Therefore, Anatomy is the science of living forms, of changing and reorganization of the human body. It includes systematization and integration of knowledge about the mutual connection and influence of somatic and visceral systems, about the influence of various external environmental factors on musculoskeletal and visceral activity and on the central nervous system.

For a good comprehension of the discipline, the first year student needs the following skills:

- good level of the language of instruction;
- confirmed competences in the sciences studied at lyceum (biology, chemistry, physics);
- digital competences (use of the Internet, document processing, electronic tables and presentations, use of graphics programs);
- ability to communicate and to work in a team;
- qualities - tolerance, compassion, creativity, initiative, autonomy.



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V. THEMES AND ESTIMATE ALLOCATION OF HOURS

The first semester

No	THEME	Number of hours		
		Lectures	Practical hours	Self-training
1.	<i>Human anatomy. Introductory course. General osteology.</i>	2		2
2.	Skeleton of the trunk. Vertebral column. Bones of the thorax. The age and gender specific features of the bones of the trunk. Skeleton of the shoulder girdle and free upper limb, skeleton of the pelvic girdle and free lower limb. Examination of the trunk and limb skeleton on a living person.		9	3
3.	<i>Functional morphology and topography of the skull.</i> The bones of the cerebral and facial skull. The skull as a whole. Individual, age and gender specific features of the skull, examination on a living person.	2	12	6
4.	ASSESSMENT of knowledge in „Osteology”.		2	
5.	<i>Arthrology. General data about the joints and their biomechanics.</i>	2		2
6.	The joints of the skull, vertebral column and thorax. The vertebral column and thorax as a whole, examination on a living person. Variants of the shape of the thorax.		3	3
7.	Joints of the upper limb - structure, functions. Joints of the pelvic girdle. Pelvis as a whole and gender specific features. Notions about pelvimetry. Joints of the lower limb, foot as a whole. Examination on a living person.		6	3
8.	<i>General mycology.</i>	2		3
9.	Muscles and fasciae of the thorax, diaphragm. Muscles and fasciae of the upper limb – structure, topography, functions, examination on a living person.		6	4
10.	Muscles and fasciae of the abdomen - structure, functions, topography, examination on a living person. Topography of the abdomen. Muscles and fasciae of the pelvis and free lower limb - structure, functions, topography, examination on a living person. Topography of the lower limb.		9	4
11.	Muscles and fasciae of the neck - structure, functions, examination on a living person. Topography of the neck. Muscles and fasciae of the head - structure, topography, functions and examination on a living person.		6	3
12.	Muscles, fasciae and topography of the back, examination on a living person.		3	2
13.	TEST. ASSESSMENT.		3	
14.	<i>General splanchnology. Functional anatomy of the digestive system.</i>	1		2
15.	Oral cavity - compartments, walls, communications. Tongue, salivary glands, teeth. Pharynx and esophagus - structure, topography, functions. Swallowing. Examination on a living person.		4	2
16.	Regions of the abdomen, abdominal and peritoneal cavities, extraperitoneal spaces. Stomach - structure, topography, development, anomalies. Small and large intestine - segments, structure, topography, distinctive structural features, age specific features, examination on a living person.		9	3
17.	Liver, pancreas, spleen - structure, topography, functions, examination on a living person.		3	2
18.	<i>Functional anatomy of the peritoneum.</i> Peritoneum - structure, derivatives, compartments, extraperitoneal spaces. Examination on a living person, its applicative significance.	1	3	2
19.	ASSESSMENT of knowledge in „Digestive system”.		3	
20.	<i>Functional anatomy of the respiratory system.</i> Nose and larynx - structure, topography, functions, examination on a living person. Trachea, bronchi, lungs, pleura, notions of mediastinum. Topography of the lungs and pleura, examination on a living person.	2	6	2
21.	<i>Heart - functional anatomy, abnormalities.</i> The heart - external conformation, compartments, structure, individual features. Topography of the heart and examination on a living person. Pericardium.	2	3	3
22.	<i>Functional anatomy of the urinary system.</i> Urinary organs (kidneys, ureters, urinary bladder) - structure, topography, abnormalities, examination on a living person.	1	3	2
23.	<i>Functional anatomy of the reproductive organs.</i> Male reproductive organs - structure, topography, abnormalities, examination on a living person. Male urethra - structure, portions, trajectory, topography, abnormalities, examination on a living person. Female reproductive organs - structure, topography, abnormalities, examination on a living person. Female urethra. Perineum - structure, topography, gender specific features, examination on a living person.	1	6	3
24.	<i>Functional anatomy of the endocrine glands.</i>	1		5
25.	TEST on „Viscera”. Assessment.		3	
Total		17	51/51	61
TOTAL		180		



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The second semester

No	THEME	Number of hours		
		Lec- tures	Practical hours	Self- training
1.	<i>Functional anatomy of spinal cord and brain. Limbic system.</i>	2		2
2.	Spinal cord and spinal meninges - structure, topography, examination on a living person. Myelencephalon, pons, cerebellum - external conformation, structure.		6	2
3.	Rhomboid fossa, isthmus rhombencephali, mesencephalon, diencephalon - external conformation, structure. Third and fourth ventricles – walls, communications. <i>Reticular formation.</i> Epiphysis and hypophysis.		6	3
4.	Cerebral hemispheres, relief of the cerebral cortex. Localization of functions in the cerebral cortex. Limbic system. White matter of the hemispheres. Basal nuclei. Lateral ventricles.		6	3
5.	<i>Functional anatomy of the spinal and cerebral meninges. Cerebrospinal fluid.</i> Cerebral meninges and cerebrospinal fluid. Examination of the brain on a living person.	2	3	2
6.	Conductive pathways of the central nervous system.		3	3
7.	TEST. ASSESSMENT.		3	
8.	<i>Functional anatomy of the vegetative nervous system.</i> Vegetative nervous system - generalities, components.	2	3	4
9.	<i>Functional anatomy of sensory systems. Functional anatomy of the cranial nerves.</i>	4		4
10.	Organ of vision - components. The eyeball, the accessory organs of the eye. II, III, IV, VI cranial nerves. Organ of hearing (external, middle and internal ear). VIII cranial nerve. Conductive pathways of the visual, vestibular and cochlear systems, examination on a living person.		6	4
11.	Trigeminal nerve - branches, areas of innervation, conductive pathway, examination on a living person.		3	2
12.	Facial nerve - fiber composition, areas of innervation, connections. Vagus nerve - segments, branches, areas of innervation, connections. Conductive pathways, examination on a living person.		6	2
13.	Glossopharyngeal nerve - nuclei, types of fibers, branches, areas of innervation, connections. Olfactory and terminal nerves. Olfactory and gustatory organs - conductive pathways. XI and XII cranial nerves - branches, areas of innervation, connections. Innervation of the tongue. Examination on a living person.		6	2
14.	TEST. ASSESSMENT.		3	
15.	Spinal nerves, their branches. Cervical plexus - formation, branches, areas of innervation. Innervation of the skin of the head and neck. Examination of the cervical plexus on a living person.		3	2
16.	<i>Functional anatomy of the vascular system of the head and neck.</i> Common, external and internal carotid arteries, subclavian artery – topography, branches, irrigation areas. Sinocarotid reflexogenous zone. Examination on a living person. Cervical segment of the sympathetic chain.	2	6	5
17.	<i>Functional anatomy of the lymphoid system.</i>	2		2
18.	Veins and lymphatics of the head and neck. Neurovascular bundle of the neck. Blood vessels, lymphatics and nerves of the mediastinum. Vascularization, innervation and lymph drainage of thoracic cavity organs. Examination on a living person.		6	2
19.	Blood vessels, lymphatics and nerves of the heart, cardiac plexuses.	2	3	2
20.	Brachial plexus - its formation, topography, branches, areas of innervation, examination on a living person. Innervation of the skin of the upper limb. Thoracic nerves. Innervation of the thoracic walls.		3	3
21.	Blood vessels and lymphatics of the thorax and upper limb - topography, examination on a living person. Vascularization and lymph drainage of the joints and muscles of the upper limb.		3	2
22.	TEST. ASSESSMENT.		3	
23.	Abdominal aorta - topography, branches, examination on a living person. Features of vascularization of the abdominal viscera. Blood vessels of the pelvis. Veins of the abdominal cavity, their tributaries, examination on a living person. Portacaval and cavo-caval anastomoses.		6	3
24.	Lymphatics of the abdomen and pelvis, their applied significance. Lumbar and sacral segments of the sympathetic chain, vegetative plexuses of the abdominal and pelvic cavities.		6	2
25.	Blood vessels and lymphatics of the lower limb, examination on a living person. Vascularization of joints and muscles of the lower limbs. Lumbar plexus - formation, branches, areas of innervation, examination on a living person. Innervation of the abdominal walls.		6	2
26.	<i>Functional anatomy and variability of blood vessels of the trunk and limbs.</i>	1		3
27.	TEST. ASSESSMENT. Assessment of practical skills.		3	
Total		17	51/51	61
TOTAL		180		



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VI. REFERENCE OBJECTIVES AND CONTENT UNITS

Objectives	Content units	
Chapter 1. LOCOMOTOR APPARATUS		
<ul style="list-style-type: none"> • to define the basic concepts of anatomy; • to know: <ul style="list-style-type: none"> ✓ anatomy research methods; ✓ anatomical terminology; ✓ classification, structure and anatomic features of the bones, joints and muscles; ✓ the axes around which movements are performed and the movements produced in the joints in muscular contraction; ✓ muscular labor and muscular levers; ✓ fasciae and intermuscular spaces of the human body and their applied significance; ✓ bony, osteofibrous, osteomuscular and intermuscular canals, retinaculae, fasciae (on the cadaver) and their applied significance; ✓ bony, articular and muscular landmarks. • to demonstrate: <ul style="list-style-type: none"> ✓ abilities for analysis and systematization of knowledge; ✓ bony, articular and muscular landmarks on cadaveric material, radiographs and on a living person; • to apply the criteria for differentiation of the anatomical formations on the cadaver and parts of the body, radiograms and on a living person by: <ul style="list-style-type: none"> ✓ identification of the human body planes, axes and orientation lines; ✓ identification of individual and regional specific features of the bones of the trunk; ✓ identification of bony, articular, and muscular landmarks on cadaveric material and on a living person; ✓ identification of bony formations, fractures, variants and developmental abnormalities of the trunk, limb and skull bones on radiograms. • to integrate gained knowledge and apply it in practice. 	<ol style="list-style-type: none"> 1. <i>Anatomical terminology</i> 2. <i>Anatomical landmarks of the human body.</i> 3. <i>General osteology.</i> 4. <i>General arthrology.</i> Joints of the trunk, limbs and skull. 5. <i>General myology.</i> Muscles and fasciae of the topographical regions of the body: muscles of the trunk: muscles of the back, muscles of the thorax and muscles of the abdomen; muscles of the shoulder and pelvic girdles, muscles of the free limbs; muscles of the head and neck. 	
	Chapter 2. DIGESTIVE SYSTEM	
	<ul style="list-style-type: none"> • to define: <ul style="list-style-type: none"> ✓ notions of organ, organ system and apparatus; ✓ derivatives of the primary gut; ✓ notions about tubular and parenchymatous organs. • to know: <ul style="list-style-type: none"> ✓ anatomical terminology and principles of classification, structure and topography of internal organs; ✓ individual and regional features of the organs of the digestive system. • to demonstrate: <ul style="list-style-type: none"> ✓ anatomical formations on cadavers, molds, radiograms and on alive person; ✓ ability to identify the topographical landmarks necessary to determine the boundaries and projection of the internal organs. • to apply the criteria for differentiating the anatomical formations on anatomical samples, cadavers, radiographs and on a living person. • to integrate anatomical knowledge with clinical disciplines by: <ul style="list-style-type: none"> ✓ drawing conclusions on the studied subject; ✓ developing of own opinions about the individual, age and gender anatomical features of the organs of the digestive system. 	<ol style="list-style-type: none"> 1. General considerations regarding the structure, classification and topography of internal organs. 2. Organs of the gastrointestinal tract and annexed glands: oral cavity, tongue, teeth and salivary glands; pharynx, esophagus, stomach; small intestine and large intestine; liver and pancreas. 3. Regions of the abdomen, abdominal and peritoneal cavities. 4. The organs of other systems located in the abdominal cavity. 5. Peritoneum and extraperitoneal spaces.



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Chapter 3.

RESPIRATORY SYSTEM. HEART. URINARY SYSTEM. REPRODUCTIVE ORGANS.

• to define:

- ✓ notions of respiratory system and of respiratory apparatus;
- ✓ concept of urinary system;
- ✓ notions of genital systems.

• to know:

- ✓ individual and regional features of respiratory system organs;
- ✓ individual and regional features of urinary system organs;
- ✓ individual and regional features of the genitalia;

• to demonstrate:

- ✓ anatomical formations on cadavers, molds, radiograms and on a living person;
- ✓ ability to identify the topographical landmarks necessary to determine the boundaries and projection of internal organs;
- to apply the criteria for differentiation of anatomical formations on anatomical samples, cadaver, radiographs and on a living person;
- to integrate anatomical knowledge with clinical disciplines by:
 - ✓ concluding on the studied subject;
 - ✓ developing of own opinions on the individual, age and gender specific features of the studied organs.

Respiratory system organs.

1. Upper and lower airways: external nose, nasal cavity, larynx, trachea, main bronchi.
2. Thyroid and parathyroid glands, thymus.
3. Respiratory organs: lungs and pleura.
4. Mediastinum.
5. Heart and pericardium.
6. Urinary organs: kidneys, ureters, urinary bladder.
7. Adrenal glands and paraganglia.
8. Male reproductive organs and male urethra.
9. Female reproductive organs and female urethra.
10. Perineum.

Chapter 4.

CENTRAL NERVOUS SYSTEM.

• to define:

- ✓ concepts related to the central nervous system (CNS);
- ✓ derivatives of primary and secondary cerebral vesicles;
- ✓ notions of CNS variants and anomalies.

• to know:

- a) anatomical terminology and principles of classification, structure and topography of CNS components;
- b) the individual and regional peculiarities of CNS.

• to demonstrate:

- ✓ anatomic formations of CNS on anatomical samples, molds, radiograms.
- to apply the criteria for distinguishing anatomical formations on the anatomical samples, on the body, on radiographs with transfer of knowledge to a living person:
- to integrate anatomical knowledge with clinical disciplines by:
 - ✓ concluding on the studied subject;
 - ✓ developing own opinions on the individual, age and gender specific features of CNS components.

1. Spinal cord and spinal meninges.

2. Brain stem, components. Fourth ventricle.
3. Diencephalon. Third ventricle.
4. Cerebral hemispheres. Localization of functions in the cerebral cortex. Limbic system.
5. White matter of the cerebral hemispheres. Basal nuclei. Lateral ventricles.
6. Cerebral meninges and cerebrospinal fluid.
7. Conductive pathways of the central nervous system.

Chapter 5.

VEGETATIVE NERVOUS SYSTEM. SENSORY ORGANS AND CRANIAL NERVES.

• to define:

- ✓ vegetative nervous system and its components;
- ✓ notion of sensory system;
- ✓ notion of conducting pathway.

• to know:

- ✓ anatomical terminology and principles of classification, structure and topography of the cranial nerves and vegetative nervous system;
- ✓ individual and regional peculiarities of the sensory organs and of the cranial nerves.

• to demonstrate:

- ✓ anatomical formations on cadavers, molds, radiographs with the transfer of knowledge on a living person;
- ✓ components of the sensory organs;

1. Vegetative nervous system – general data, components.

2. Sensory organs.
3. Conductive pathways of the sensory systems.
4. Cranial nerves, conductive pathways.



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- ✓ cranial nerves on the anatomical samples.
- **to apply** criteria for differentiating anatomical formations on anatomical samples, cadavers and radiographs.
- **to integrate** anatomical knowledge with clinical disciplines by:
 - ✓ concluding on the studied subject;
 - ✓ developing own opinions on the individual, age and gender anatomic specific features of the vegetative nervous system, of the sensory organs and of the cranial nerves.

Chapter 6.

PERIPHERAL NERVOUS SYSTEM, BLOOD VESSELS AND LYMPHATICS OF THE NECK, THORAX AND UPPER LIMB

- **to define:**
 - ✓ notions of the spinal nerve, somatic plexus and vegetative plexus;
 - ✓ notions of magistral and collateral vessels, arterial and venous plexuses;
 - ✓ notions of intra- and intersystemic arterial anastomoses.
- **to know:**
 - ✓ anatomical terminology and principles of classification of spinal nerves and blood vessels;
 - ✓ features of somatic and vegetative plexus formation;
 - ✓ vascular features of the internal organs, joints and skeletal muscles of the head, neck, thorax and upper limb.
- **to demonstrate:**
 - ✓ anatomical formations on cadavers, molds, radiographs and on a living person;
 - ✓ ability to identify the topographic landmarks needed to determine the boundaries and projection of the blood vessels and nerves.
- **to apply** criteria for differentiating anatomical formations on anatomical samples, cadavers and radiographs.
- **to integrate** anatomical knowledge with clinical disciplines by:
 - ✓ concluding on the studied subject;
 - ✓ developing own opinions on the studied subject.

1. Spinal nerves, their branches.
2. Cervical plexus.
3. Arteries, veins and lymph nodes of the head and neck.
4. Arterial anastomoses.
5. Cervical segment of the sympathetic chain.
6. Blood vessels, lymph nodes and nerves of the mediastinum.
7. Vascularization, innervation and lymph drainage of thoracic cavity organs.
8. Blood vessels, lymph nodes and nerves of the heart, cardiac plexuses.
9. Thoracic spinal nerves.
10. Brachial plexus.
11. Blood vessels and lymph nodes of the upper limb.
12. Vascularization and lymph drainage of the joints and muscles of the upper limb.

Chapter 7.

PERIPHERAL NERVOUS SYSTEM, BLOOD VESSELS AND LYMPHATICS OF THE ABDOMEN, PELVIS AND LOWER LIMB.

- **to define:**
 - ✓ notions of the cavo-caval and portacaval anastomoses.
- **to know:**
 - ✓ anatomical terminology and principles of classification of spinal nerves and blood vessels;
 - ✓ features of somatic and vegetative plexus formation;
 - ✓ vascular features of the internal organs, joints and skeletal muscles of the abdomen, pelvis and lower limb.
- **to demonstrate:**
 - ✓ anatomical formations on cadavers, molds, radiographs and on a living person;
 - ✓ ability to identify the topographic features necessary to determine the projection of blood vessels and nerves.
- **to apply** criteria for differentiation of anatomical formations on anatomical samples, cadaver and radiographs:
- **to integrate** anatomical knowledge with clinical disciplines by:
 - ✓ concluding on the studied subject;
 - ✓ developing own opinions on the studied subject.

1. Blood vessels, lymph nodes and nerves of the abdominal cavity.
2. Vascularization, innervation and lymph drainage of abdominal cavity organs.
3. Lumbar plexus.
4. Sacral plexus.
5. Blood vessels and lymph nodes of the lower limb.
6. Vascularization and lymphatic drainage of the joints and muscles of the lower limb.



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VII. PROFESSIONAL (SPECIFIC (SC) AND TRANSVERSAL (TC)) COMPETENCES AND STUDY OUTCOMES

✓ **PROFESSIONAL COMPETENCES (specific) (SC)**

- CP1. Knowledge, understanding and use of anatomical language;
- CP2. Knowledge of the features of the structure, development and functioning of the human body;
- CP3. Knowledge of the organization of the locomotor apparatus, of the systems of organs, vascular and nervous systems;
- CP4. Identification of normal anatomical formations, anatomical variants and anomalies on cadavers and on a living person;
- CP5. Knowledge and identification of anatomical landmarks on preparations, molds and on a living person;
- CP6. Knowledge of projection of anatomical formations on a living person and the ability to describe and determine the limits of the internal organs related to bones, muscles and other landmarks;
- FP7. Description of radiographs, tomograms, MRI, sonographic results, etc.;
- CP8. Knowledge of anatomical dissection techniques;
- CP9. Practical application of anatomical knowledge;
- CP10. Solving of case based problems and formulating the conclusions;
- CP11. Performing of various practical exercises and procedures for carrying out specific professional activities based on anatomical knowledge and other fundamental disciplines.

✓ **TRANSVERSAL COMPETENCES (TC)**

- CT1. Developing autonomic decisional capacity;
- CT2. Formation of personal attitude;
- CT3. Ability of social interaction and group activity;
- CT4. Fitting in interdisciplinary projects, extracurricular activities;
- CT5. Performing activities and exercising the specific role for studying the discipline in a team. Promoting the spirit of initiative, dialogue, cooperation, positive attitude and respect for colleagues, empathy, altruism and continuous improvement of one`s activities;
- CT6. Developing different learning techniques;
- CT7. Selection of digital materials, critical analysis and conclusions;
- CT8. Presentation of individual scientific projects;
- CT9. Responsible execution of professional tasks with the application of the values and norms of professional ethics, as well as the provisions of the legislation in force. Promoting logical reason, practical application, assessment and self-assessment in decision-making;
- CT10. Objective self-evaluation of continuing vocational training skills to develop personal and professional skills.

✓ **STUDY OUTCOMES**

- to have knowledge about structure, topography and anatomical features of the organs and organ systems;
- to understand the principles of application and transfer of knowledge in medical practice;
- to apply on a living person the theoretical knowledge regarding determination of limits and projection of the organs to anatomical landmarks;
- to be able to describe the radiographies, MRI, endoscopic, sonographic images, etc;
- to be able to deduce possible causes and understand the mechanisms that influence the physiological processes, which can contribute to the appearance of anatomical variants and development anomalies;
- to evaluate the place and role of human anatomy in the preclinical training of a medical student;
- to be able to implement the gained knowledge in the research activity;
- to possess skills of analysis and synthesis of information, and to be able to use the acquired knowledge and Information Technologies.



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VIII. STUDENT'S SELF-TRAINING

Suggestions for individual activity

The passive listening of the course is one of the less efficient methods of learning, even when it is well structured and illustrated. That is why in order to memorize the material many teaching methods related to the delivered material are required.

The practical work is more efficient than reading of how to do it.

Students who desire to succeed in the course of Human Anatomy need to work insistently and actively with the demonstrative material.

Considering the learning methodology the department would suggest the students some tips to be followed:

1. First of all, it is necessary to make acquaintance with the subjects which should be answered using the notes from your workbook.
2. Read attentively the text from the textbook, make notes. Try to formulate yourselves the main ideas. Study the schemes and images from the textbook and workbook. Use the acquired knowledge to demonstrate on anatomical samples. Answer the questions from your workbooks for practical work.
3. Come to lectures not only for the sake of being present! If you do so, you will not be able to meet all the requirements. At lectures take notes attentively asking yourselves if you understand the explained material, rating your level of knowledge.
4. Mind the following: teachers are more than happy when you ask questions. This means that you try to understand and process the studied material.
5. For a more progressive comprehension of the lecture you are advised to organize yourselves into 2-3 students for regular meetings in order to discuss the theme which was studied at the lesson preparing yourselves for the tests and exams. As a rule, the material is memorized easier in groups, than when you work on your own.
6. The course of Human Anatomy expects a lot from you. It comprises around 5000 terms, the majority of them are new and need to be memorized. These requirements involve a rational time usage, so, it will be necessary to handle time so as to find the balance between the effort given for an appropriate knowledge feedback and your private life.

Depth of the subject knowledge requires each working hour of direct contact with the teacher to be supplemented with at least 1-2 hours of individual student's work.

For a successful comprehension of the course in Human Anatomy, you need to work individually around 8-10 hours per week.

For that purpose, you should use the *Anatomical Study Hall* of the Department of Human Anatomy.



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No.	Expected product	Implementation strategies	Assessment criteria	Implementation terms
1.	Working with bibliographic sources and information resources	<p>To study carefully the subject using the textbook and materials of the lecture.</p> <p>To get acquainted with topics that require reflection on the subject.</p> <p>To get acquainted with the list of additional information sources on the topic and selecting the most suitable sources for studying the material with the identification of the key of the topic.</p>	Ability to extract the essentials; interpretative skills; workload.	During the semester
2.	Working with the workbook.	<p>Before starting work with the workbook, the student has to get acquainted with the topic and to analyze the information from the manual, lectures, collections of schemes and other sources that would help the student to accomplish the tasks.</p> <p>Consecutive solving of the tasks.</p> <p>At the end of each theme, some conclusions have to be made, which can be discussed with the colleagues.</p> <p>Verification of the finalities and appreciation of their achievement.</p> <p>Additional information sources have to be consulted in order to carry out the task of the student.</p>	Workload; filling-in the workbook and solving the proposed tasks on the topic; ability to formulate conclusions.	During the semester
3.	Work with anatomical samples and cadaveric material in the demonstration room (over program)	<p>The student will benefit from the self-training program after hours. If required, he can contact the professor on duty.</p> <p>Interaction conditions are created with both group colleagues and other students from all faculties.</p> <p>The student is able to work with anatomical preparations himself or in a team.</p>	Workload; ability to demonstrate anatomical formations on samples; formulating conclusions on applied significance of the anatomical formations.	During the semester



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IX. METHODOLOGICAL SUGGESTIONS FOR TEACHING-LEARNING-ASSESSMENT

- **Teaching and learning methods used**

1. The Human Anatomy discipline is delivered according to the classical methodology; with lectures and practical classes.
2. The theoretical course is delivered in the lectures held by the course holders. An interactive lecture is practiced.
3. Also, the following methods are used:
 - ✓ explanation;
 - ✓ brainstorming;
 - ✓ heuristic conversation and debate;
 - ✓ group work;
 - ✓ individual work;
 - ✓ working with manual, scientific text and the anatomy atlas;
 - ✓ solving the case based problems;
 - ✓ interactive listening.

- **Applied teaching strategies / technologies (specific to the discipline)**

In practical work, together with the teacher of the group, students study on the anatomical samples, use planes, molds, tables, fill-in the workbooks, do preparation of anatomical samples, that would be further demonstrated to the colleagues.

- **Methods of assessment (including the method of final mark calculation)**

Current: frontal/individual assessment of knowledge by:

- ✓ written assessments;
- ✓ demonstration of anatomical structures included in the curriculum of the discipline on the anatomical samples;
- ✓ solving the docimological tests in University Informational Management System (UIMS) – SIMU;
- ✓ graphical representation of the schemes on certain subjects;
- ✓ completion of practical workbooks for individual work;
- ✓ solving the case based problems.

Final: assessment - exam.

7/8 assessments and the practical skills assessment are organized at Human anatomy discipline, during the 2 semesters of the study, as follows:

In the first semester:

Assessment no. 1 - Locomotor apparatus (oral evaluation / practical skills + testing).

Assessment no. 2 - Organs of the digestive system (oral evaluation / practical skills + testing).

Assessment no. 3 - Respiratory system organs. Heart (oral evaluation / practical skills + testing).

Assessment no. 4 - Organs of the urinary and genital systems (oral evaluation/ practical skills + testing).

Assessment of practical skills.

In the second semester:

Assessment no. 1 - Central nervous system (oral evaluation / practical skills + testing).

Assessment no. 2 – Vegetative nervous system. Cranial nerves. Sensory organs (oral evaluation / practical skills + testing).

Assessment no. 3 - Vascularization and lymphatics of the head, neck, thorax and upper limb. Cervical and thoracic spinal nerves (oral evaluation / practical skills + testing).

Assessment no. 4 - Vascularization, lymphatics and innervation of organs of the abdomen, pelvis and lower limb segments (oral evaluation / practical skills + testing).

Assessment of practical skills.



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So, formative assessment consists of 8 assessments, 4 in each semester, and the assessment of practical skills.

Each sample is assessed separately with marks from 0 to 10.

The assessment includes the evaluation of knowledge gained in the practical work and the theoretical course on a particular study chapter and includes the demonstration and annotation of the natural anatomical samples, the description and the annotation of the various schemes and pictures in the practical workbooks, including the assessment of the practical skills.

At the Human Anatomy Exam (semester and yearly) only students who have obtained a semester mark 5.0 and higher and have recovered all the absences of the practical lessons are admitted to the final exam. Students who have absences at lectures will be charged with additional questions discussed at classes.

The assessment of practical skills consists of demonstrating by the respondents of anatomical formations studied in the practical lessons. Practical skills assessment is carried out with examination cards that include 10 questions. Three of them are highlighted and are part of the **minimum level of knowledge for the practical exam**, without knowledge of which a student cannot get admission.

Demonstration or description by the respondents of anatomical samples begins immediately after he/she has chosen the test, without being given any time for preparation. In order to reflect the answers to the control questions, the examiner receives a special card stating the number of points obtained for each answer as well as the total number of points.

Examination of Human anatomy discipline consists of testing in the UIMS – SIMU.

The overall score is based on two components: **the half-yearly average score** with the coefficient 0.5 and the **SIMU test** with the coefficient of 0.5.

Assessment of knowledge is graded from 10 to 1.0 (with decimals).

Scale of assessment using rounded marks values

Intermediate marks scale (annual average, marks from the examination stages)	National Assessment System	ECTS Equivalent
1,00-3,00	2	F
3,01-4,99	4	FX
5,00	5	E
5,01-5,50	5,5	
5,51-6,0	6	
6,01-6,50	6,5	D
6,51-7,00	7	
7,01-7,50	7,5	C
7,51-8,00	8	
8,01-8,50	8,5	B
8,51-8,00	9	
9,01-9,50	9,5	A
9,51-10,0	10	

The average annual mark and the marks of all stages of final examination (computer test, oral) - are expressed in numbers according to the mark scale (according to the table), and the final mark obtained is expressed in number with two decimals, which is transferred to student's record-book.

Absence on examination without a reason is recorded as "absent" and is equivalent to 0 (zero). The student has the right to have two re-examinations.



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X. RECOMMENDED LITERATURE:

A. Compulsory:

1. PRIVES M., LYSENKOV N., BUSHKOVICH V. Human Anatomy, vol. I. /The weight-bearing or locomotor apparatus. The science of the viscera. / Translated from the Russian by Ludmila Aksenova. 1985. Mir Publishers, Moscow, 1989.
2. PRIVES M., LYSENKOV N., BUSHKOVICH V. Human Anatomy, vol. II. /The science of the vessels. The science of the nervous system. The science of the sense organs. / Translated from the Russian by Ludmila Aksenova. 1985. Mir Publishers, Moscow, 1989.
3. GLOBAL L. Human Anatomy. Angiology, Peripheral Nervous System and Sense Organs. Chişinău, 2012.
4. HACINA T. Guide in anatomy: Locomotor apparatus, Chişinău, 2013.
5. SINELNICOV R. D., SINELNICOV IA. R. Atlas of human anatomy, vol. I, II, III, IV, M. 1990.
6. CATERENIUC I., LUPASCU T., BABUCI A. et al. Culegere de scheme la anatomia omului / Сборник схем по анатомии человека / Collection of schemes for human anatomy. Chişinău, 2012, 2014.
7. LUPASCU T., CATERENIUC I., GLOBAL L. Lucrări practice la Anatomia Omului / *Notebook for Practical work at Human Anatomy* / Практические занятия по анатомии человека (Ghid pentru autoinstruire / *Guide for self-studying* / Пособие по самоподготовке). Ed. a VIII-a trilingvă (revăzută și completată). III. Sistemele cardiovascular, limfatic, nervos periferic și organele senzoriale. III. The cardiovascular, lymphatic and nervous systems and sense organs. III. *Сердечно-сосудистая, лимфатическая, периферическая нервная системы и органы чувств*. Chişinău, 2017.
8. LUPASCU T., CATERENIUC I., GLOBAL L., BATÂR D., BABUCI A., BENDELIC A. Lucrări practice la Anatomia Omului / *Notebook for Practical work at Human Anatomy* / Практические занятия по анатомии человека (Ghid pentru autoinstruire / *Guide for self-studying* / Пособие по самоподготовке). Ed. a IX-a trilingvă (revăzută și completată). II. Sistemul Nervos Central. Sistemele cardiovascular, limfatic, nervos periferic și organele senzoriale. / II. *Central Nervous System. The cardiovascular, lymphatic and nervous systems and sense organs*. / II. Центральная нервная система. Сердечно-сосудистая, лимфатическая, периферическая нервная системы и органы чувств. Chişinău, 2018.

B. Additional:

1. KEITH L. MOORE, ARTUR F. DALLEY, ANNE M.R. AGUR. Clinically Oriented Anatomy, 6-th ed., 2007.
2. DRAKE R. L., VOGL W., MITCHELL A. W. M. et al. Gray's Atlas of Anatomy. Elsevier, 2008.
3. DRAKE R. L., VOGL W., MITCHELL A. W. M. Gray's Anatomy for students. Philadelphia... Toronto, 2005.
4. GRAY'S Anatomy, 39th ed. Edinburgh... Toronto, 2005 / 40th ed. Edinburgh... Elsevier Limited, 2008.
5. KAHLE W., FROTSCHER M. Color Atlas of Human Anatomy, vol. III, Nervous System and Sensory Organs. Stuttgart-New York, 2003.
6. LEONHARDT H. Color Atlas of Human Anatomy. Vol. I-III. Stuttgart-New York, 2003.
7. MOORE K. L., DALLEY A. F. Clinical oriented Anatomy. Philadelphia... Tokyo, 2006.
8. NETTER FRANK H. Atlas of Human Anatomy. 4-th Edition, Elsevier, 2006.