



## PA 7.5.1 SYLLABUS

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Approved

At the meeting of the Council of the  
Faculty of Medicine no. 2

Minutes No. 6 of 17.06.2014

Dean of the Faculty  
MD, associate professor **Mircea Betiu**



Approved

At the meeting of the Human Anatomy  
Chair

Minutes No. 11 of 20.02.2014

Head of the Chair,  
PhD, professor **Ilia Catereniuc**

### SYLLABUS FOR STUDENTS OF THE FACULTY OF MEDICINE

Name of the course: **Human Anatomy**

Code of the course: **F. 01.O.001 F. 02.O.001 F. 03.O.001**

Type of course: **Compulsory discipline**

**Total number of hours – 306 hours**

Including: **I semester - 119 hours, including: lectures -34 hours, practical hours – 85 hours.**

**II semester - 102 hours, including: lectures -17 hours, practical hours - 85 hours.**

**III semester - 85 hours, including: lectures -17 hours, practical hours - 68 hours.**

Number of credits provided for the course: **23 credits, including: I semester - 10**

**II semester – 7**

**III semester – 6**

**Lecturers teaching the course:** MD, associate professor – T. Hacina,  
MD, Lecturer – A. Babuci,  
MD, Lecturer – L. Globa,  
MD, Lecturer – A. Bendelic



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### *I. Aim of the discipline*

The study of morpho-functional peculiarities of organs and organ systems in different periods of postnatal development and the use of this knowledge in learning basic and clinical disciplines for preventing different diseases and for their proper diagnosis and treatment. A special attribution refers to the educational role in professional training and to self-education when studying our body, which approaches us to the principle of Socrates "Know Yourself".

### *II. Objectives obtained in teaching the discipline*

#### **On the level of understanding and comprehension students need to:**

- realize the formation of 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 alive person;
- know traditional and modern methods of anatomical exploration;
- possess and reproduce information about the human organism as a whole unit, its relationship with the environment, its constituent elements (tissues, organs, organ systems, appliances);
- reproduce knowledge about the essential stages of development of the body, ontogenesis and phylogenesis of organs and organ systems apart;
- comprehend and reproduce general definitions about the norms, variants of norms, abnormalities and the importance of their application;
- possess and reproduce information about the human body proportions, constitutional types, and the importance of their application;
- possess and reproduce information about individual peculiarities, age and sex of all anatomical formations;
- reproduce information about the general structural specific features of the systems and organ systems;
- reproduce knowledge about the structure of anatomical formations on macro and macromicroscopic levels, their function, topography, its radiographic, ultrasound, MRI, endoscopic projection and aspect on alive.

#### **On the level of application students need to:**

- identify anatomical formations;
- arrange all anatomical formations into their correct anatomical position;
- demonstrate the structural aspects of the body regions (the dissected corpse), anatomical samples, molds, etc.;
- identify anatomical structures on radiological (radiograms, tomography) and sonographical images, obtained by IRMN;
- determine on alive the parts of bones, muscles, joints, vascular and nervous parts of various body regions;
- palpate on alive the prominent formations of bones, muscles, joints;
- palpate the pulse of the arteries of the head, neck and extremities 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, live aspects of anatomical formations;



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- possess basic skills of dissection in the dissecting-room and producing preparations for studies.

### On the level of integration students need to:

- Appreciate the importance of knowledge in human anatomy in learning basic medical disciplines;
- Recognize the applicability of anatomical knowledge for diagnosis and treatment of diseases.

### III. Provisional terms and conditions

Anatomy is a fundamental science of medical education, studying the human organism and its ontogenetic development, which is closely related to the environmental changes and daily activities of each individual. By using the methods, which come to support each physician (palpation, percussion, radiological, endoscopic, CT, ultrasound, ultrasonic methods and others), Anatomy becomes the science of all living forms, and the basis for other disciplines of medical education, including the vocabulary of over 5000 terms. Modern medicine does not require from today's anatomy an abstract human structure and form, but real data about individual structure. Therefore, Anatomy is the science of living forms, of changing and reorganization of 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, there will be needed a good knowledge of biology and anatomy, obtained in undergraduate studies.

### IV. The main content of the course

#### A. Lectures: First semester

Week	Subject	Nr. of hours
I	Anatomy as a science, anatomy departments. Anatomy and related medical sciences. Historical evolution of anatomy. Anatomical examination methods. Types of body constitution. Anatomical terminology.	2 hours
II	General osteology. General characteristics of the skeletal system. Classification of the bones. Bone as an organ, its structure and functions. Periosteum, compact bone, bony marrow. Development and developmental abnormalities of the skeletal system. Internal and external factors influencing bone structure.	2 hours
III	The skeleton of the trunk and limbs. The vertebral column. Development of the vertebrae, developmental abnormalities. Age and individual specific features of the vertebrae. The thoracic cage as a whole. Development of the ribs and sternum, developmental abnormalities. Age and individual structural features of the thoracic cage. Development of the limb bones, developmental abnormalities.	2 hours
IV	Morphology and topography of the skull. Development of the human skull. Structural and developmental features of the skull. Skull of a newborn. Postnatal changes of the skull. Individual and gender specific features of the skull. Craniometry and craniometrical points.	2 hours
V	General Arthrology. Biomechanics of joints. Classification of joints. Synarthroses and diarthroses. Age characteristic features of bone joints.	2 hours
VI	Functional anatomy of the joints of upper and lower limbs. Differences	2 hours



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	and similarities in the structure of limbs joints. Biomechanics of the limbs joints. Age and sex differences of the structure of limbs joints.	
<b>VII</b>	Radiological anatomy of the osteoarticular system. X-ray anatomy of the joints. Radiological image of tubular and flat bones. Age differences in radiological image of the bones.	<b>2 hours</b>
<b>VIII</b>	Anatomy of the skeleton and joints on alive person. Surface anatomy of the trunk and limbs skeleton. Elements of the skeleton and joints palpable on alive person.	<b>2 hours</b>
<b>IX</b>	General myology. Structure and classification of muscles. Muscle as an organ, muscular annexes. Muscular work. Muscular crossings and spirals. Development of muscles, abnormalities.	<b>2 hours</b>
<b>X</b>	Functional anatomy of the trunk muscles. Classification of the trunk muscles. Diaphragm, function, development, abnormalities. Abdominal muscles. Weak places of the anterolateral abdominal wall.	<b>2 hours</b>
<b>XI</b>	Functional anatomy of the vertebral column. Biomechanics of the vertebral column. Muscles that influence movements of the vertebral column. Anatomy of the vertebral column on alive person.	<b>2 hours</b>
<b>XII</b>	Functional anatomy of the limbs muscles. Development and developmental abnormalities of the muscles of the limbs. Structural differences and similarities of the upper and lower limbs muscles. Topography of the limbs.	<b>2 hours</b>
<b>XIII</b>	Functional anatomy of the head and neck muscles. Classification, development and structural features of the muscles of the head. Fasciae and interfascial spaces of the head and neck, topography, practical importance.	<b>2 hours</b>
<b>XIV</b>	Anatomy and topography of the skeletal muscles on alive person. Surface anatomy of the trunk and limbs muscles.	<b>2 hours</b>
<b>XV</b>	Periods of the prenatal and postnatal ontogenesis. Critical periods of development of the human body. Morphofunctional characteristic features of the body in critical periods.	<b>2 hours</b>
<b>XVI</b>	Dynamics of the body segments.	<b>2 hours</b>
<b>XVII</b>	The educational film "Functional Anatomy and topography of the muscles of the neck, thorax and abdomen.	<b>2 hours</b>
<b>Total</b>		<b>34 hours</b>

### *B. Practical lessons:*                      **First semester**

Week	Theme	Nr. of hours
<b>I</b>	1. Orientation elements of the human body. Notions about axes and planes. Anatomical terminology. Methods of study of anatomy on alive person: a) direct sensory method, b) mediated sensory methods. Notion of age: biological or medical and calendaristical age. Morphological indices of biological age.	<b>3 hours</b>
	2. Skeleton of the trunk. Vertebral column. Segments of the vertebral column. Common structure of the vertebrae. Functions of the vertebral column.	<b>2 hours</b>
<b>II</b>	3. Regional specific features of the vertebrae. The vertebral column as a whole. Age and sex characteristic features. Developmental abnormalities of	<b>3 hours</b>



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	<p>the vertebrae. Examination of the vertebrae and vertebral column on alive person.</p>	
	<p>4. Bones of the thorax. The thoracic cage as a whole, age and sex peculiarities. Constitutional types of the human body and variants of the shape of the thorax. Shoulder girdle bones. Examination on alive person of the thorax. Practical significance.</p>	<b>2 hours</b>
<b>III</b>	<p>5. The skeleton of the free upper limb. The humerus and the bones of the forearm and hand - parts, anatomical position, structure, location. Examination of upper limb bones on alive person.</p>	<b>3 hours</b>
	<p>6. Pelvic bones. Hip bone and femur - anatomical position, structural elements. Examination of the pelvis and femur on alive person, practical significance.</p>	<b>2 hours</b>
<b>IV</b>	<p>7. The bones of the leg and foot. Tibia and fibula - anatomical location, structure. Bones of the foot – components, location. Examination of the leg and foot bones on alive person.</p>	<b>3 hours</b>
	<p>8. The skull – general data, components and compartments of the skull. Bones of the cerebral skull: the frontal, occipital and parietal bones - location, anatomical position, components, structure, functional role, developmental abnormalities. Examination on alive person and practical significance.</p>	<b>2 hours</b>
<b>V</b>	<p>9. The sphenoid and ethmoid bones – location, parts, anatomical position, structure, functional role. Developmental abnormalities. Practical significance.</p>	<b>3 hours</b>
	<p>10. The temporal bone - location, constitutive parts, anatomical position, functional role. Temporal bone cavities and canals, their importance. Age specific features, examination on alive person, applied significance.</p>	<b>2 hours</b>
<b>VI</b>	<p>11. The facial skull, its components. The maxilla, mandible, palatine bone - location, anatomical position, structure, functional role. Small bones of the facial skull - location, structure. Maxillary sinus - location, functional role and practical importance. Examination of the facial skull bones on alive person.</p>	<b>3 hours</b>
	<p>12. The skull as a whole. The cerebral skull and the facial skull – definition, boundaries, functional role. The vault and base of the skull, the boundary line. Endobase and exobase of the skull. The temporal, infratemporal and pterygopalatine –fossae, their walls and communications.</p>	<b>2 hours</b>
<b>VII</b>	<p>13. The skull as a whole. The orbit and nasal cavity - location, walls, relief, compartments, communications. Individual morphological features, age and sex characteristic features of the skull. Notion of craniometry, cranial indices and craniometrical points.</p>	<b>3 hours</b>
	<p><i>The first assessment.</i> Assessment of theoretical knowledge and practical skills obtained by students in practical classes 1 to 13 and lectures.</p>	<b>2 hours</b>
<b>VIII</b>	<p>15. General artrosyndesmology. Sinarthrosis, hemiarthrosis, diarthrosis - general structure, types - principles of classification. Skull bones junctions - classification, structure, examination on alive person. Temporomandibular joint - structure, functions.</p>	<b>3 hours</b>
	<p>16. Joints of the vertebral column - structure and movements. Classification of spinal joints. Joints of the vertebrae with the skull. The functions of the vertebral column.</p>	<b>2 hours</b>



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	Age specific features and examination of the vertebral column on on alive person.	
<b>IX</b>	17.The joints of the thorax - classification, structure, functions. Shoulder girdle joints – structure, movements. Costovertebral joints and joints of the ribs with the sternum. Thorax as a whole. Examination on alive person. Joints of the shoulder girdle bones: acromioclavicular and sternoclavicular joints.	<b>3 hours</b>
	18.The joints of the free upper limb - structure, functions. The shoulder and elbow joints. Joints of the bones of the forearm. Radiocarpal joint and joints of bones of the hand: structure, functions, movements. Examination of the upper limb joints on alive person.	<b>2 hours</b>
<b>X</b>	19.The joints of the pelvis - structure, functions. Pelvis as a whole, compartments, sex characteristic features, diameters. The hip joint - structure, functions. Notion of pelvimetry. Pelvic diameters, axis and inclination of the pelvis, applied aspects. The hip joint - biomechanics, examination on alive person.	<b>3 hours</b>
	20. The knee joint and joints of the bones of the leg: structure, functions. The foot as a whole: points of support, longitudinal and transverse arches. Examination of the lower limb joints on on alive person, applied aspects.	<b>2 hours</b>
<b>XI</b>	21. <i>The second assessment.</i> Assessment of theoretical knowledge and practical skills obtained by students in practical classes 15 to 20 and lectures.	<b>3 hours</b>
	22. General myology. Muscles and fasciae of the thorax - structure, topography and examination on alive person. Diaphragm. Structure of the muscle as an organ. Muscle at rest and in action. Principles of the muscles classification. Methods of examination of the muscles. The diaphragm, its parts, orifices, weak points, functional role, development and abnormalities. Topography and landmarks of the thoracic muscles.	<b>2 hours</b>
<b>XII</b>	23. The muscles and fasciae of the shoulder girdle. Muscles of the arm - structure, topography and examination on alive. Topography and muscular landmarks of the shoulder girdle and arm regions. Muscles participating in biomechanics of the shoulder girdle and arm.	<b>3 hours</b>
	24. Forearm muscles and fasciae - structure, topography and examination on alive person. Classification of the muscles and fasciae of the forearm. Muscular and bony landmarks of the forearm.	<b>2 hours</b>
<b>XIII</b>	25.The muscles and fasciae of the hand - structure, topography and examination on alive person. Classification of the muscles of the hand. Structural characteristic features of the fascia of the hand. Synovial sheaths of the hand, applied anatomy. Muscular, cutaneous and bony landmarks of the hand. Topography of the upper limb.	<b>3 hours</b>
	26. The abdominal muscles and fasciae - structure, topography and examination on alive. Topography of the abdomen. Classification of abdominal muscles. Abdominal fasciae. The sheath of rectus abdominis muscle. Weak places of the anterolateral wall of the abdomen. Muscular and bony landmarks of the abdomen, their applicative role.	<b>2 hours</b>
<b>XIV</b>	27.The muscles and fasciae of the pelvis and thigh: structure, topography, and examination on alive person. Muscular and bony landmarks of the thigh and pelvis, their applied significance.	<b>3 hours</b>
	28.The muscles and fasciae of the leg and foot - structure, topography, functions and examination on alive person. The muscular and bony	<b>2 hours</b>



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	landmarks of the lower limb, their practical importance. Topography of the lower limb.	
<b>XV</b>	29.The muscles of the neck - structure, topography, functions. Superficial and deep muscles, the suprahyoid and infrahyoid muscles. Examination of the muscles of the neck on alive person.	<b>3 hours</b>
	30.Fasciae of the neck – classification, structural and topographical characteristic features, applied significance. Topography of the neck - triangles, intermuscular and interfascial spaces, practical importance. Highlights of the muscle and bones of the neck.	<b>2 hours</b>
<b>XVI</b>	31.The muscles and fascia of the head - structure, topography, functions and examination on on alive person. Muscles of facial expression and muscles of mastication. Fasciae of the cephalic region, structural peculiarities, interfascial spaces. The mimics.	<b>3 hours</b>
	32. The muscles, fasciae and topography of the back. The anatomical topographical formations of the back. Anatomy of the dorsal region of the trunk on alive person.	<b>2 hours</b>
<b>XVII</b>	33.The <i>habitus</i> . The features causing external physical characteristics of the individual. Posture, its types. Right posture. Position. Walking.	<b>3 hours</b>
	34. <b>The third evaluation.</b> Assessment of theoretical knowledge and practical skills obtained by students in practical classes 22 to 33 and lectures.	<b>2 hours</b>
<b>Total</b>		<b>85 hours</b>

### A. Lectures: Second semester

Week	Subject	Nr. of hours
<b>I</b>	General splanchnology. Functional anatomy of the digestive system. Development of the internal organs. Classification of the viscera by functional, topographic and structural principles. Structure of the tubular and parenchymatous organs.	<b>2 hours</b>
<b>II</b>	Functional anatomy of the peritoneum. Development, structure and functions of the peritoneum. The parietal and visceral peritoneum. Topography and derivatives of the peritoneum.	<b>2 hours</b>
<b>III</b>	Functional anatomy of the respiratory system. Development of organs of the respiratory system, abnormalities. Age characteristic features of the organs of the respiratory system.	<b>2 hours</b>
<b>IV</b>	The heart – functional anatomy. Development of the heart, abnormalities. Individual and age specific features of the heart.	<b>2 hours</b>
<b>V</b>	Functional anatomy of the urinary system. Development of organs of the urinary system, abnormalities. Structural and functional characteristic features of the organs of the urinary system.	<b>2 hours</b>
<b>VI</b>	Functional anatomy of organs of the reproductive system. Development of the genital organs, abnormalities. Age characteristic features of the male and female genital organs.	<b>2 hours</b>
<b>VII</b>	General data about the central nervous system. Functional anatomy of the spinal cord. The morpho-functional characteristics and the role of the nervous system for the organism. Development of the nervous system, abnormalities.	<b>2 hours</b>
<b>VIII</b>	Functional anatomy of the brain. General data, principles of the brain	<b>2 hours</b>



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	structure. Reticular formation and functional significance. The pathways of the reticular formation. The limbic system – structure, functional role.	
<b>IX</b>	Functional anatomy of the meninges of the spinal cord and of the meninges of the brain. The cerebrospinal fluid. The intermeningeal spaces and their contents. The cerebrospinal fluid, its production, circulation and drainage. The haematoencephalic and haematoliquid barriers.	<b>1 hour</b>
<b>Total</b>		<b>17 hours</b>

### *B. Practical lessons:*                      Second semester

<b>Week</b>	<b>Subject</b>	<b>Nr. of hours</b>
<b>I</b>	1. The oral cavity – compartments, walls, content, connections. The tongue – external shape, structure. The lips and cheeks, the palate. Development and abnormalities of the oral cavity and of the tongue.	<b>2 hours</b>
	2. The teeth and gums. The salivary glands and anatomical formations of the salivary glands. The terms of eruption of the deciduous and permanent teeth. The gums. The dental occlusion.	<b>2 hours</b>
<b>II</b>	3. The pharynx and the oesophagus – external shape and internal structure, topography, examination on alive person. Deglutition. Development of the pharynx and oesophagus, abnormalities and age characteristic features.	<b>2 hours</b>
	4. Regions of the anterolateral abdominal wall. The abdominal and peritoneal cavities. General data about abdominal viscera. The stomach – external and internal shape, structure, topography, examination on alive person. Individual characteristic features. Development and abnormalities. X-ray examination of the stomach.	<b>2 hours</b>
<b>III</b>	5. The small intestine – topography, functions, development and abnormalities. Examination of the small intestine on alive person.	<b>2 hours</b>
	6. The large intestine – segments, external and internal shape, structure, topography, functions, development and abnormalities, age characteristic features, examination on alive person.	<b>2 hours</b>
<b>IV</b>	7. The liver, the pancreas, the spleen – external shape, structure, topography, functions, development, examination on alive person. General structure of the parenchymatous organs. Structure of the liver – lobes, sectors, segments, lobules. Characteristic features of blood supply of the liver. The intra- and extrahepatic bile ways.	<b>2 hours</b>
	8. The peritoneum - general data, structure, functions, derivatives. The peritoneal cavity – compartments, topography, the retroperitoneal space. Examination on alive person.	<b>2 hours</b>
<b>V</b>	9. <b>The first assessment.</b> Control of the theoretical knowledge and practical skills obtained during the practical classes (1-8) and delivered lectures.	<b>2 hours</b>
	10. The respiratory system – general characteristics, components, functional role. The external nose, the nasal cavity and the paranasal sinuses – parts, walls, compartments, connections. Examination of the external nose, nasal cavity and paranasal sinuses on alive person.	<b>2 hours</b>
<b>VI</b>	11. The larynx - external and internal shape, structure, topography, functions, characteristic features, examination on alive person.	<b>2 hours</b>





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	12.The trachea, bronchi and lungs – external shape, structure, functions, topography, examination on alive person.	<b>2 hours</b>
<b>VII</b>	13.Pleura and mediastinum – structure, components, topography. Parietal and visceral pleura – structural and functional characteristic features, the pleural sacs. The role of the pleura in breathing. Topography of the pleural sacs, the interpleural areas, applicative significance. The mediastinum – limits, content, topography, classification after BNA and PNA. Examination of the pleura and mediastinum on alive person.	<b>2 hours</b>
	14.The heart – external shape, compartments, structure, individual peculiarities, development, abnormalities. Chambers of the heart and their internal shape. Structure of the cardiac walls. The fibrous skeleton of the heart, the conducting system of the heart. Age and sexual characteristic features of the heart.	<b>2 hours</b>
<b>VIII</b>	15.Topography of the heart and examination on alive person. Examination of the heart on alive person. The pericardium, its structure, topography, functions, the pericardial cavity, sinuses, examination.	<b>2 hours</b>
	16.The urinary organs: the kidneys, the ureters, the urinary bladder – external and internal shape, structure, topography, development, abnormalities, examination on alive person.	<b>2 hours</b>
<b>IX</b>	17.The male genital organs – components, structure, topography, development, abnormalities, examination on alive person. The male urethra – structure, trajectory, topography, abnormalities, examination on alive person.	<b>2 hours</b>
	18.The female genital organs – components, structure, topography, development, abnormalities, examination on alive person. The female urethra.	<b>2 hours</b>
<b>X</b>	19.The perineum – structure, topography, sexual peculiarities. Examination on alive person. The clinical meaning of the perineum.	<b>2 hours</b>
	20.The endocrine glands – structure, topography, functions. Classification of the endocrine glands. Examination of the endocrine glands on alive person.	<b>2 hours</b>
<b>XI</b>	<b>21.The second assessment.</b> Control of the theoretical knowledge and practical skills obtained during the practical classes (10-20) and delivered lectures.	<b>2 hours</b>
	22.General data on central nervous system. The spinal cord and its meninges – structure, topography. External shape and internal structure of the spinal cord. The meninges of the spinal cord and the intermeningeal spaces. Age specific features and examination on an alive person.	<b>2 hours</b>
<b>XII</b>	23.General data on development of the brain, the primary and secondary cerebral vesicles. General review of the brain. The medulla oblongata and the pons – external shape, structure.	<b>2 hours</b>
	24.The cerebellum, the rhomboid fossa, the isthmus of the rhombencephalon. The IV-th ventricle – walls, connections.	<b>2 hours</b>
<b>XIII</b>	25.The midbrain – components, external shape and internal structure. The reticular formation, its morphological and functional characteristics.	<b>2 hours</b>
	26.The diencephalon – components, external shape and internal structure. The III-rd ventricle, walls, connections. The thalamencephalon – epithalamus, thalamus and metathalamus. The hypothalamus and the subthalamic region – location, components parts, functional role.	<b>2 hours</b>
<b>XIV</b>	27.The cerebral hemispheres. The relief of the cerebral hemispheres – grooves and gyri. The telencephalon – components, limits, location. The	<b>2 hours</b>



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	rhinencephalon – components, location, functional role. Age characteristic features of the telencephalon.	
	28. Location of the cortical centers of analysers in the cerebral cortex. The limbic system. Notions of cytoarchitectonics, myeloarchitectonics and cortical areas. Notions of analyzers. The cortical centres of analyzers and signalizing systems.	<b>2 hours</b>
<b>XV</b>	29. The white matter of hemispheres. The basal ganglia (nuclei). Types of fibers and anatomical formations forming them. The lateral ventricles of the brain – general aspect, location, parts, walls, connections.	<b>2 hours</b>
	30. The cerebral meninges, sources of blood supply of the brain. Examination of the brain, of the blood vessels and of the cerebrospinal fluid on alive person. The intermeningeal spaces. The cerebrospinal fluid – composition, production, circulation, functional role. The haematoencephalic and haematoliquid barriers.	<b>2 hours</b>
<b>XVI</b>	31. The pathways of the central nervous system. General notions of conducting pathways – components, functional role. The afferent pathways – exteroceptive, proprioceptive, interoceptive – general characteristics, classification, schemes and functional role.	<b>2 hours</b>
	32. The efferent pathways. The pyramidal and extrapyramidal systems – general characteristics, classification, schemes and functional role.	<b>2 hours</b>
<b>XVII</b>	33. The central and peripheral organs of the immunity system.	<b>2 hours</b>
	<b>34. The third assessment.</b> Control of the theoretical knowledge and practical skills obtained during the practical classes (22-33) and delivered lectures.	<b>2 hours</b>
<b>Total</b>		<b>68 hours</b>

### A. Lectures:

### Third semester

Week	Subject	Nr. of hours
<b>I</b>	Functional anatomy of the vegetative nervous system. Sympathetic and Parasympathetic nervous system. Reflex arc of the vegetative nervous system.	<b>2 hours</b>
<b>II</b>	Functional anatomy of the information systems (sense organs). Morpho-functional characteristic features of sense organs.	<b>2 hours</b>
<b>III</b>	Functional anatomy of the cranial nerves. General characteristics of the cranial nerves. Connections of the cranial nerves with the vegetative nervous system.	<b>2 hours</b>
<b>IV</b>	Functional anatomy of the hearth. Peculiarities of blood and nerve supply of the hearth. Cardiac intra- and extraorganic nervous plexuses, sources of heart innervation.	<b>2 hours</b>
<b>V</b>	Functional anatomy of the blood supply of the head and neck. The intra- and intersystemic anastomoses, their functional and clinical significance.	<b>2 hours</b>
<b>VI</b>	Functional anatomy of the lymph and lymphoid systems. The development of the lymph and lymphoid systems. Connections of these systems with the blood system. Factors that promote lymph circulation. Central and peripheral organs of immune system.	<b>2 hours</b>
<b>VII</b>	Characteristic features of visceral and somatic nerve supply. The	<b>2 hours</b>



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	principles of formations of vegetative plexuses. Vegetative ganglia. The principles of formations of somatic plexuses.	
<b>VIII</b>	Functional anatomy and variability of blood vessels of the limbs. Arterial anastomoses of blood vessels of the limbs. Variants and abnormalities of the blood vessels of the limbs.	<b>2 hours</b>
<b>IX</b>	The educational film “Microcirculation and collateral circulation of the blood.	<b>1 hour</b>
<b>Total</b>		<b>17 hours</b>

### *B. Practical lessons:                      Third semester*

Week	Theme	Nr. of hours
<b>I</b>	1. The vegetative nervous system (VNS) – general data. The sympathetic and parasympathetic nervous system – central and peripheral parts. Structural and functional characteristic features of VNS. Reflex arc of the vegetative nervous system.	<b>2 hours</b>
	2. General data on sense analyzers. Components of analyzer. Classification and functional role of sense organs. Organ of vision – general data, components. Eye ball coats – structure, topography.	<b>2 hours</b>
<b>II</b>	3. Auxiliary organs of the eye, its structure and topography. The optic analyzer pathways. Cranial nerves II, III, IV and VI. Examination on alive person.	<b>2 hours</b>
	4. The vestibulocohlear organ. External, middle and internal ears. Structure, topography. Auricle, external auditory meatus. Ear drum. Middle ear – components, and functional role.	<b>2 hours</b>
<b>III</b>	5. Internal ear – location, structure. The VIII-th pair of cranial nerves. The pathways of the hearing and balance analyzers. Examination on alive person.	<b>2 hours</b>
	6. The trigeminal nerve – general data. The first (ophthalmic) and second (maxillary) divisions of the trigeminal nerve, their branches, area of innervation, connections.	<b>2 hours</b>
<b>IV</b>	7. The third division of the trigeminal nerve (mandibular) – distribution, area of innervation, connections. The pathway of the trigeminal nerve.	<b>2 hours</b>
	8. The VII-th pair of cranial nerves –content of fibers, branches, area of innervation, connections. The pathway of the facial nerve. Examination on alive person. Mimics and its clinical significance.	<b>2 hours</b>
<b>V</b>	9. The X-th pair of cranial nerves – segments, branches, area of innervation, connections. The pathway of the vagus nerve.	<b>2 hours</b>
	10. The IX-th pair of cranial nerves – branches, area of innervation, connections. The pathway of the glossopharyngeal nerve. Taste and smell analyzers, pathways, and examination on alive person.	<b>2 hours</b>
<b>VI</b>	11. The XI-th and XII-th pairs of cranial nerves– branches, area of innervation, connections. Innervation of the tongue.	<b>2 hours</b>
	12. The cervical nerves – posterior and anterior branches. Cervical plexus – formation, branches, area of innervation, connections. The innervation	<b>2 hours</b>



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	of the skin of the head and neck. Examination of the cervical plexus on alive person.	
<b>VII</b>	13. Common carotid artery. External carotid artery – topography, branches, area of blood supply. The sino-carotid reflex zone. Examination of the common carotid artery, external carotid artery and its branches on alive person.	<b>2 hours</b>
	14. The internal carotid artery– topography, parts, branches, area of blood supply. Examination on alive person.	<b>2 hours</b>
<b>VIII</b>	15. The subclavian artery and its branches - topography, branches, area of blood supply, examination on alive person. Cervical part of the sympathetic chain– ganglions, branches, connections. Inter- and intrasystemic anastomoses of the subclavian artery, its clinical and functional significance.	<b>2 hours</b>
	16. General data on veins – structure, types, veins formation. General data about lymph system – lymph vessels and lymph nodes. The veins and lymph vessels of the head and neck – topography, projection and examination on an alive person. Vasculo- nervous bundle of the neck.	<b>2 hours</b>
<b>IX</b>	17. <i>The first assessment.</i> Control of theoretical knowledge and practical skills obtained during classes 1 - 16 and lectures.	<b>2 hours</b>
	18. The hearth and pericardium – structure, topography, examination on alive person.	<b>2 hours</b>
<b>X</b>	19. Blood and lymph vessels, nerves of the heart, cardiac plexuses. Coronary arteries – origin, path, branches, and blood supply areas, anastomoses. The veins of the hearth – tributaries, path, drainage. Examination on alive of the coronary arteries.	<b>2 hours</b>
	20. General data on mediastinum (definition, compartments, composition, classifications). Blood and lymph vessels, nerves of the anterior mediastinum (BNA) - topography, examination on alive person. Aorta – origin, path, segments, topography. Pulmonary trunk and arteries – origin, topography, branches. Pulmonary veins. General view of the superior vena cava. The internal thoracic vessels and the phrenic nerve. The lymphatic vessels and nodes of the anterior mediastinum.	<b>2 hours</b>
<b>XI</b>	21. The blood vessels, lymphatic vessels and nodes, and the nerves of the posterior mediastinum (BNA) – topography. The blood, nerve and lymphatic supply of the thoracic organs. Vegetative plexuses of the thoracic cavity.	<b>2 hours</b>
	22. Brachial plexus– formation, topography. Short branches of the brachial plexus – paths and zones of innervation. The thoracic spinal nerves and their branches.	<b>2 hours</b>
<b>XII</b>	23. The long branches of the brachial plexus – topography, zones of innervation, examination on alive person. Innervation of the bones, joints, muscles and skin of the upper limb.	<b>2 hours</b>
	24. Blood vessels, lymphatic vessels and nodes of the upper limb – topography, examination on alive person. Projection on alive of the upper limb arteries and veins.	<b>2 hours</b>
<b>XIII</b>	25. <i>The second assessment.</i> Control of theoretical knowledge and practical skills obtained during lessons 18 - 24 and lectures. Abdominal aorta – topography, branches, distribution, examination on alive person. Blood supply of the abdominal organs.	<b>2 hours</b>



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	Anastomoses between parietal and visceral branches, their functional and clinical role.	
	26. Blood vessels of the pelvis. Blood supply of the pelvic organs and spinal cord. Common iliac artery, external and internal iliac arteries – origin, path, topography, branches, distribution, area of supply, anastomoses. Common, external and internal iliac veins.	<b>2 hours</b>
<b>XIV</b>	27. Veins of the abdominal cavity, their tributaries. The porto-caval and cavo-caval anastomoses. The inferior vena cava system. The parietal and visceral tributaries of the inferior vena cava. The functional and applied significance of the porto-caval and cavo-caval anastomoses.	<b>2 hours</b>
	28. The lymphatic vessels and nodes of the abdominal cavity and pelvis. General view on parietal and visceral lymphatic vessels and nodes of the abdominal and pelvic cavities.	<b>2 hours</b>
<b>XV</b>	29. The lumbar and sacral compartments of the sympathetic chain. The vegetative plexuses of the abdominal and pelvic cavities. The innervations of the abdominal and pelvic organs.	<b>2 hours</b>
	30. Blood vessels and lymphatic vessels and nodes of the lower limb – topography, examination on alive person. Blood supply of the joints and muscles of the lower limb. The variants and abnormalities of the vessels of the lower limb. Projection of the arteries, veins and lymphatic vessels of the lower limb, on alive person.	<b>2 hours</b>
<b>XVI</b>	31. The lumbar plexus – formation, branches, area of distribution. The innervation of the abdominal walls.	<b>2 hours</b>
	32. The sacral and coccygeal plexuses – formation, branches, area of innervation, examination on alive person. The innervation of the bones, joint, muscles and skin of the limb. The innervation of the perineum and external genital organs.	<b>2 hours</b>
<b>XVII</b>	33. The skin and its derivatives. The innervation of the skin. The zones of referred pain (Zakharyin – Head's). The skin – functional role, structure, blood supply. The skin glands, hair and nails. The mammary glands – structure, blood, nerve and lymph supply, its abnormalities and examination.	<b>2 hours</b>
	34. <i>The third evaluation.</i> Control of theoretical knowledge and practical skills obtained during classes 25 - 33 and lectures.	<b>2 hours</b>
<b>Total</b>		<b>68 hours</b>

### V. Recommended literature:

#### - A. compulsory:

1. Prives M., Lysenkov N., Bushkovich V. **Human Anatomy**, v. I,II, 1989
2. Sinelnicov R.D., Sinelnicov Ia. R. **Atlas of human anatomy**, v. I, II, III, IV, M. 1990
3. Keith L. Moore, Artur F. Dalley, Anne M.R. Agur . **Clinically Oriented Anatomy**, 6-th edition, 2007.
4. Catereniuc I., Lupa cu T., Babuci A. et al. **Culegere de scheme la anatomia omului / Collection of schemes for human anatomy.**  
Ed. a III-a (rev zut i completat ). Chi in u, 2012, 248 p.
5. Lupa cu T., Catereniuc I., Globa L. et al. **Lucr ri practice la Anatomia Omului/ Notebook for Practical work at Human Anatomy /**  
(Ghid pentru autoinstruire / *Guide for self-studying* /  
. Vol. I, II, III. Chi in u, 2013, 2014.



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- *B. additional:*

1. **“Gray’s Anatomy”** 27-th edition
2. **Gray’s Atlas of Anatomy**. Richard L. Drake, A. Wayne Vola, Adam V.M. Mitchell, Richard M. Tibbitts, Paul E. Richardson. International Edition, 2008.
3. Frank H. Netter **“Atlas of Human Anatomy”** 4-th Edition, 2006
4. Artur C. Guyton **“Anatomy and Physiology”** Philadelphia, New York, Chicago, 1985
5. Romanes G.J. **“Cunningham’s manual and practical anatomy”**. Volume I “Upper and lower limbs”; Volume II “Thorax and abdomen”; Volume III “Head, neck and brain”
6. Gardner Ernest **“A regional study of Human structure”**
7. Heinz Fencis **“Pocket atlas of Human anatomy”**
8. James E. Angerson M.D. **“Grant’s atlas of anatomy”**
9. Wilhelm Firban, Roland Sehmiel **“Atlas of Radiologic Anatomy”**
10. Yohaness Sobotta **“Human anatomy”**, Munhen-Wien-Baltimor, Bonn, Germany, 1977
11. Tamara Hacina **“Guide in anatomy: Locomotor apparatus”**, Chi in u, 2013
12. *tefane M. Anatomia omului*. V. I. Chi in u: CE-P *Medicina*, 2007, 372 pag.
13. *Stefanet M. Anatomia omului*. Vol. II, ed. 2 (rev zut i completat ). Chi in u: CE-P *Medicina*, 2013, 432 p.
14. *Stefanet M. Anatomia omului*. Vol. III, ed. 2 (rev zut i completat ). Chi in u: Tipografia Sirius SRL, 2013, 428 p.

**VI. Teaching and learning methods** The subject Human Anatomy is delivered according the classic methodology: with lectures and practical classes. During these practical classes along with the teacher in charge, the students study the anatomical preparations prepared in advance, they will use sketches, moulds, charts, and they will also make various preparations related to the studied subject which will be afterwards presented to their colleagues.

**VII. Suggestions for individual activity** The passive listening of the course is one of the less efficient methods of learning, even in case of being well structured and illustrated. That is why in order to memorize the material lots of teaching methods related to the delivered material are required. The practical work is more efficient than reading of how to do it. Volunteers who desire to succeed successful in the course of Human Anatomy need to work insistently and actively with the demonstrative material. Considering the learning methodology the department proposes several advices to be followed:

1. First of all it will be necessary to make acquaintance with the subjects which should be answered using the necessary practical notes
2. Read attentively the text from the textbook, make notes. Try to formulate yourselves the main moments. Refer to the schemes and images from the textbook and notebook. Use the acquired knowledge to demonstrate anatomical specimens. Answer the questions from your practical workbook. Try to transfer your knowledge on alive person.
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 things explained, 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 taught material.



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

### ***VIII. Methods of assessment***

There are 9 tests (academic progress) in this subject within the period of three semesters. They are as follows:

#### **I-st semester:**

*Test Nr 1*- Osteology.

*Test Nr 2*- Arthrosyndesmology.

*Test Nr 3*- Myology

#### **II-nd semester:**

*Test Nr1* – Digestive system.

*Test Nr2* – Respiratory, Urogenital systems.

*Test Nr3* – Central nervous system, Endocrine glands and Immune system.

#### **III-d semester:**

*Test Nr1* – The vegetative nervous system. The sensory organs. Blood supply, lymphatic vessels and innervation of the organs of the head and neck.

*Test Nr2* – Blood supply, lymphatic vessels and innervation of the organs of the thorax and upper limb.

*Test Nr3* – Blood supply, lymphatic vessels and innervation of the organs of the abdominal and pelvic regions, and of the lower limb.

Like so, the assessment of academic progress consists in 9 tests in 3 semesters. Each test is noted with marks from 0 till 10 and may be done twice.

The semester mark is formed out of points accumulated during the semester tests divided by the number of tests.

The tests include the assessment of the knowledge acquired at practical classes and lectures on a certain chapter, as well as demonstration and annotation of anatomic samples, description of various schemes and pictures.

On the exam in Human Anatomy (each semester and annually) only those students who got for the semester mark 5,0 and more and who have worked out gaps on missed classes are admitted. Students who have missed lectures will get additional questions from those lectures. Traditionally the exam in Human Anatomy is made up of practical and oral tests.

The Ist stage (practical) represents the check up on the practical abilities and consists in a student's demonstration of anatomical structures which were discussed during practical classes. The students "skills" are checked by means of cards which contain 10 examination questions. Three of them are underlined and are the most important ones for the assessment. If the students do not know those questions they are not admitted to the second stage of the exam – that is testing on theoretical knowledge. The demonstration or description of



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anatomical specimens starts immediately after the student chooses the examination card, without time for preparation. When considering the answers to the exam questions, the examiner receives a special file where the points for each answer are fixed as well as the total amount of points.

Stage II (oral test) consists of the oral checking up of theoretical knowledge and it is carried out in the presence of two examiners. The exam cards contain 3 different tasks, studied during the semester at lectures and practical classes. The evaluation of theoretical knowledge shall be performed in accordance with the total number of points received from those three subjects marked with grades from 0 to 10.

The subjects for the exams (the Ist and IInd stage) are approved at the chair meeting and are announced to students at the beginning of the semester.

The general mark is decided according to three factors: semester medium mark (with 0,5 coefficient), practical test ( Ist stage) – coefficient 0,2 and oral test (IInd stage) with the coefficient 0,3. The knowledge evaluation is appreciated with marks from 10 to 1, (without decimals) as follows:

### Methods of mark rounding

The average of current and final marks	Final mark
5	5
5,1-5,5	5,5
5,6-6,0	6
6,1-6,5	6,5
6,6-7,0	7
7,1-7,5	7,5
7,6-8,0	8
8,1-8,5	8,5
8,6-9,0	9
9,1-9,5	9,5
9,6-10	10

*Absence on examination without good reason shall be recorded as "absent" and is equivalent to 0 (zero). The student has the right to re-take the exam twice.*

### **IX. Language of study**

Romanian, English, Russian