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MINISTRY OF SCIENCE AND HIGHER EDUCATION

RUSSIAN FEDERATION

Federal State Autonomous Educational Institution of Higher Education

NORTH-CAUCASUS FEDERAL UNIVERSITY

APPROVED

Assoc. Prof. Kubanov S.I.

PhD in Medical Sciences

Dean Faculty of Medicine and Biology

COURSE OUTLINE OF THE DISCIPLINE (MODULE)

Anatomy

- Specialty: 31.05.01 General Medicine
- Mode of training: Full-time
- Year of commencement of studies: 2026
- Delivered in Semester 2, 3, 4

Developed by:

Developed by:

Head of the Department of Anatomy and Histology

Dzhandarova T.I.

Stavropol, 2026

1. Aim and Objectives of Mastering the Discipline (Module)

- Aim of mastering the discipline. The purpose of studying the discipline "Anatomy" is to acquire knowledge of the structure, topography, blood supply and innervation of internal organs, the musculoskeletal system, sensory organs, as well as the principles of obtaining morphological knowledge necessary for further training in other fundamental medical disciplines, as well as for clinical and preventive disciplines.
- Objectives of mastering the discipline
 - Mastering this discipline will help students study the structure, functions, and functions of organs and systems to the required extent.
 - Examine individual, gender, and age-related characteristics of the body's structure, including perinatal development (organogenesis); demonstrate the anatomical and topographic relationships of organs, demonstrate the variability of organs and systems, and reveal developmental defects; and reveal the interrelationships and interdependencies of individual body parts.
 - Demonstrate the relationship of the body as a whole with changing environmental conditions, and the impact of work and social conditions on the development and structure of the body and its systems as a whole.
 - During teaching, foster ethical standards of behavior in the "anatomical theater," and treat human organs and corpses with respect and care. Instill high moral standards of behavior in the dissection rooms of a medical university.

2. Place of the Discipline (Module) in the Structure of the Training (educational) Program

This discipline is one of the compulsory disciplines of the basic part; its development takes place in 2-4 semesters.

3. List of Potential Learning Outcomes for the Discipline (Module), Correlated with the Outcomes of Mastering the Educational Program

Code and definition of the competence	Code and definition of the indicator	Planned learning outcomes for the discipline (module) describing the stages of competency and indicator development
GPC-5. Capable of assessing morphofunctional, physiological states, and pathological processes in the human body to solve professional tasks.	AI-1 GPC-5. Assesses morphofunctional and physiological states and processes in the human body at the individual, group, and population levels to solve professional tasks. AI-2 GPC-5. Identifies pathological states and processes in the human body to solve professional tasks.	Etiology and Pathogenesis

4. Volume of the Academic Discipline (Module) and Control *

Volume of classes: Total: _10_ ECTS credits, 360 academic hours.	Full-time type of study, in academic hours
Face-to-face work	200
Lectures / including practical training	50
Laboratory works / including practical training	150
Practical classes / including practical training	
Independent work	133
Forms of control	27
Examination	4
Credit (Pass/Fail)	
Graded credit (Graded Pass/Fail test)	

* The discipline (module) provides for the use of e-learning and remote learning technologies (unless otherwise set by the educational standard).

5. Content of the Discipline (Module), Structured by Topics (Sections) with an Indication of the Hours and Types of Classes

#	Section (topic) of the discipline and brief content	Competencies and indicators to be developed	Full-time training				Forms of current control of academic progress
			Contact work of students with the teacher / of them practical skills training, hours			Independent work, hours	
			Lectures	Practical classes	Laboratory work		
1.	Introduction to Anatomy. General Anatomy of the Skeleton 1. Parts and Regions of the Human Body. 2. Planes, Axes, and Main Landmarks in Anatomy. 3. Basic Anatomical Terminology. 4. General Osteology 5. Functions of the Skeleton 6. Bone as an Organ 7. Classification of Bones 8. Internal and External Structure of Bones, Chemical Composition. 9. Bone Development, Bone Development Anomalies.	AI-1 GPC-5 AI-2 GPC-5	2		2	44	Interview (discussion)

2.	Torso Skeleton. Vertebral Column. 1. Vertebral Column. Physiological Curves of the Spinal Column and Their Age-Related Changes. 2. General Structural Features of the Vertebral Spine. 3. Structural Features of the Cervical Vertebrae. 4. Structural Features of the Thoracic Vertebrae. 5. Structural Features of the Lumbar Vertebrae. 6. Structural Features of the Sacral Vertebrae. Coccyx.	AI-1 GPC-5 AI-2 GPC-5			2		Interview (discussion)
3.	Skeleton of the Torso. Rib Cage. 1. Rib Classification. 2. Rib Structure. 3. Sternum. 4. Boundaries and Thoracic Apertures. 5. Rib Cage Shapes.	AI-1 GPC-5 AI-2 GPC-5			2		Interview (discussion)
4.	Skeleton of the Upper Limb 1. Bones of the upper limb (scapula, clavicle, humerus, radius, ulna, carpal bones, metacarpal bones, phalanges).	AI-1 GPC-5 AI-2 GPC-5			2		Interview (discussion)
5.	Skeleton of the Lower Limb 1. Bones of the lower limb (pelvic bones, femur, tibia, fibula, tarsal bones, metatarsal bones, phalanges).	AI-1 GPC-5 AI-2 GPC-5			2		Interview (discussion)
6.	The skeleton of the head (skull). 1. General structure of the skull. 2. Bones of the cranial cranium: a) frontal, b) parietal, c) occipital, d) sphenoid (main), d) ethmoid, e) temporal.	AI-1 GPC-5 AI-2 GPC-5			2		Interview (discussion)
7.	The skeleton of the head (skull). 1. Maxilla. 2. Mandible. 3. Small bones of the facial skull: a) zygomatic, b) palatine, c) nasal, d) lacrimal, e) hyoid, e) vomer, g) inferior nasal concha. 4. Buttresses of the skull.	AI-1 GPC-5 AI-2 GPC-5			2		Interview (discussion)

8.	Topography of the skull. Topography of the skull: vault (roof), orbit, nasal cavity, temporal, infratemporal, and pterygopalatine fossae. The skull of a newborn. Craniometry Concept. X-ray Anatomy of the Skull.	AI-1 GPC-5 AI-2 GPC-5	2		2		Interview (discussion)
9.	Cranial Topography. 1. External Skull Base. 2. Internal Skull Base. 3. Skull Norms. 4. Projection Lines and Points of the Skull. 5. Skull Ontogenesis	AI-1 GPC-5 AI-2 GPC-5			2		Interview (discussion)
10.	Types of Bone Joints. Vertebral and Skull Joints. 1. Bone Joints. 2. Joint Classification. 3. Vertebral Joints. Vertebral Column. 1. Joints of the Vertebral Column with the Skull. 2. Joints of the Skull Bones. Temporomandibular Joint.	AI-1 GPC-5 AI-2 GPC-5	2		2		Interview (discussion)
11.	Articulations of the bones of the torso. Rib cage. 1. Articulations of the ribs with the thoracic vertebrae and sternum. 2. The rib cage as a whole. 3. X-ray anatomy of the spine and thorax.	AI-1 GPC-5 AI-2 GPC-5			2		Interview (discussion)
12.	Articulations of the bones of the upper limb. 1. Articulations of the bones of the upper limb. Joints of the pelvic girdle. 2. Shoulder, elbow, wrist joints, and forearm joints. 3. Hand joints. 4. X-ray anatomy of the joints of the upper limb.	AI-1 GPC-5 AI-2 GPC-5			2		Interview (discussion)
13.	Articulations of the bones of the lower limb. 1. Articulations of the bones of the lower limb. Joints of the pelvic girdle. The pelvis as a whole. 2. Hip and knee joints. 3. Articulations of the bones of the lower leg. 4. Ankle joint, articulations of the bones of the foot. 5. Radiographic anatomy of the lower limb joints.	AI-1 GPC-5 AI-2 GPC-5			2		Interview (discussion)

14.	Muscles of the trunk. Muscles of the back and chest. 1. Muscle structure and classification. 2. Muscles and fascia of the back and chest. 3. Diaphragm. Anatomical prerequisites for diaphragmatic hernias.	AI-1 GPC-5 AI-2 GPC-5	2		2		Interview (discussion)
15.	Muscles of the trunk. Abdominal muscles. 1. Abdominal muscles and fascia. 2. Linea alba. Rectus abdominis sheath. 3. Inguinal canal. 4. Weaknesses of the abdominal wall as anatomical prerequisites for hernia formation.	AI-1 GPC-5 AI-2 GPC-5			2		Interview (discussion)
16.	Muscles of the head and neck. 1. Muscles and fascia of the neck. 2. Topography of the neck. 3. Muscles of the head: facial expression and masticatory muscles. 4. Fascia of the head.	AI-1 GPC-5 AI-2 GPC-5			2		Interview (discussion)
17.	Muscles of the upper limb. 1. Muscles and fascia of the upper limb and shoulder girdle. 2. Axillary fossa and axillary cavity, shoulder topography. 3. Muscles and fascia of the forearm and hand. 4. Topography of the forearm and hand.	AI-1 GPC-5 AI-2 GPC-5			2		Interview (discussion)
18.	Muscles of the lower limb. 1. Muscles and fascia of the pelvis and thigh. 2. Topography of the gluteal region and thigh. 3. Femoral canal. Anatomical prerequisites for the development of femoral hernias. 4. Muscles and fascia of the leg and foot. 5. Topography of the leg and foot.	AI-1 GPC-5 AI-2 GPC-5			2		Interview (discussion)
19.	Concept of the topographic and anatomical features of fascia and cellular spaces. 1. Accessory apparatus of skeletal muscles. 2. Fasciae, cellular spaces, and topographic structures of the head, neck, chest, abdomen, back, upper limb, and lower limb. 3. Structure of the musculoskeletal system on X-rays and tomograms.	AI-1 GPC-5 AI-2 GPC-5	2		2		Interview (discussion)

20.	Anatomy and topography of the spinal cord and its membranes. Formation of spinal nerves. 1. General anatomy of the nervous system. 2. Meninges of the spinal cord and brain. 3. Topography and anatomy of the spinal cord: grooves and fissures are present on the surface of the spinal cord; divisions of the spinal cord. 4. The spinal ganglion: structure, topography, and significance. 5. What is a spinal cord segment? 6. Topography of spinal cord segments.	AI-1 GPC-5 AI-2 GPC-5	2		2		Interview (discussion)
21.	Anatomy and topography of the spinal cord and its membranes. Formation of spinal nerves. 1. Gray matter of the spinal cord. 2. Nuclei of the anterior horn of the gray matter of the spinal cord. 3. Nuclei of the posterior horn of the gray matter of the spinal cord. 4. Nuclei of the lateral horn of the gray matter of the spinal cord.	AI-1 GPC-5 AI-2 GPC-5			2		Interview (discussion)
22.	Anatomy and topography of the spinal cord and its meninges. Formation of spinal nerves. 1. White matter of the spinal cord. 2. Conducting tracts of the anterior funiculus of the spinal cord. 3. Conducting tracts of the posterior funiculus of the spinal cord. 4. Conducting tracts of the anterior funiculus of the spinal cord. 5. Spinal nerve, topography, formation, division into branches. 6. Reflex and reflex arc.	AI-1 GPC-5 AI-2 GPC-5	2		2		Interview (discussion)

23.	Rhombencephalon. Medulla oblongata. Hindbrain: pons, cerebellum, isthmus of the rhombencephalon. 1. Derivatives of the rhombencephalon. 2. Topography and external structure of the medulla oblongata. 3. Localization and functional significance of the gray matter nuclei of the medulla oblongata. 4. Localization of the conducting pathways in the medulla oblongata. 5. Pons: external and internal structure: localization and functional significance of the gray matter nuclei and conducting pathways. 6. Rhomboid fossa. Fourth ventricle. 7. Cerebellum: external and internal structure. 8. Cerebellar peduncles, their fiber composition, and the functional significance of the fascicles. 9. Anatomical structures of the isthmus of the rhombencephalon and their functional significance.	AI-1 GPC-5 AI-2 GPC-5	2		2		Interview (discussion)
24.	Midbrain. Nuclei of the cranial nerves of the brainstem. 1. Midbrain, topography, external and internal structure. Cerebral peduncles. 2. Nuclei of the cranial nerves. 3. Cranial nerves that exit the brain between the pyramid and olive. 4. Cranial nerves that emerge from the medulla oblongata behind the olive. 5. Cranial nerves that emerge from the brain at the junction of the pons and medulla oblongata. 6. Cranial nerves that emerge from the brain on the dorsal surface of the brainstem. 7. Foramina through which the cranial nerves of the brainstem exit the skull.	AI-1 GPC-5 AI-2 GPC-5			2		Interview (discussion)
	TOTAL in 2 Semester		16		48/0	44	
25.	Anatomy and topography of the forebrain. Diencephalon. 1. Diencephalon. 2. Thalamus. 3. Epithalamus. Metathalamus. 4. Hypothalamus. 5. Third ventricle.	AI-1 GPC-5 AI-2 GPC-5			2	36	Interview (discussion)

26.	Anatomy and topography of the forebrain. Telencephalon. 1. Telencephalon. Surface of the hemispheres. 2. Lobes of the hemispheres. 3. Corpus callosum. 4. Basal ganglia. 5. Cerebral cortex. 6. Localization of functions in the cerebral cortex. 7. Lateral ventricles. Cerebrospinal fluid.	AI-1 GPC-5 AI-2 GPC-5			4		Interview (discussion)
27.	Conduction pathways of the brain and spinal cord. 1. General anatomical and functional characteristics, classification, and functional significance of the pathways (nerve bundles) of the brain and spinal cord. 2. Anatomy and topography of the association pathways of the cerebrum and their functional significance. 3. Anatomy and topography of the commissural pathways of the cerebrum and their functional significance. 4. Classification of the projection pathways (nerve bundles) of the brain and spinal cord. 5. Afferent (ascending, or sensory) pathways (nerve bundles): general principle of structure and classification.	AI-1 GPC-5 AI-2 GPC-5	2		4		Interview (discussion)
28.	Brain and spinal cord pathways. 1. Topography of the pain and temperature pathways in brain and spinal cord sections and their significance. 2. Topography of the touch and pressure pathways in brain and spinal cord sections and their significance. 3. Topography of the cortical proprioceptive pathways in brain and spinal cord sections and their significance. 4. Projection of the cerebellar proprioceptive pathways in brain and spinal cord sections and their significance.	AI-1 GPC-5 AI-2 GPC-5			4		Interview (discussion)

29.	Brain and spinal cord pathways. 1. Efferent (descending, or motor) pathways (nerve bundles): general structure and classification. 2. Topography of the pyramidal tracts in brain and spinal cord sections and their significance: a) corticonuclear tract; b) anterior corticospinal tract; c) lateral corticospinal tract. 3. Topography of extrapyramidal tracts in sections of the brain and spinal cord, their significance: a) rubrospinal tract; b) reticulospinal tract; c) vestibulospinal tracts; d) olivospinal tract (fibers).	AI-1 GPC-5 AI-2 GPC-5	2		4		Interview (discussion)
30.	The meninges and intermeningeal spaces of the brain and spinal cord. Cerebrospinal fluid, formation, and outflow pathways into the blood and lymph. Lateral ventricles. Third ventricle. Fourth ventricle. 1. Meninges of the spinal cord. 2. Intermeningeal spaces of the spinal cord and their contents. 3. Meninges of the brain. 4. Intermeningeal spaces of the brain and their contents. 5. Anatomy of the fourth ventricle, its communications, and their significance. 6. Anatomy of the third ventricle, its communications, and their significance. 7. Anatomy of the lateral ventricles, their communications, and their significance. 8. The ventriculo-cerebrospinal fluid system, formation, outflow, and reabsorption pathways of cerebrospinal fluid.	AI-1 GPC-5 AI-2 GPC-5	2			2	Interview (discussion)

31.	Cranial Nerves V, XI, XII Cranial Nerves: Nuclei, Branches, Innervation Areas: 1. Anatomy of the trigeminal nerve: nuclei, exit sites from the brain, ganglion, 3 branches, their topography, branching, fiber composition of the branches, innervation areas. 2. Anatomy of the accessory nerve: nuclei, exit sites from the brain and skull, branches, fiber composition, innervation areas. 3. Anatomy of the hypoglossal nerve: nucleus, exit sites from the brain and skull, topography, branches, fiber composition, innervation areas. I, VII, IX Cranial Nerves: nuclei, branches, innervation areas. Gustatory and olfactory analyzers, their pathways: 1. Anatomy of the olfactory nerve: exit sites from the brain and cranial cavity, fiber composition, innervation areas. Olfactory analyzer, its pathway. 2. Concept of the terminal nerve. 3. Anatomy of the facial nerve: nuclei, exit points from the brain and cranial cavity, topography, sensory and parasympathetic ganglia, branches, fiber composition, innervation areas. The taste analyzer and its pathway. 4. Anatomy of the glossopharyngeal nerve: nucleus, exit points from the brain and cranial cavity, topography, sensory and parasympathetic ganglia, branches, fiber composition, innervation areas. 5. II, III, IV, VI cranial nerves: nuclei, branches, innervation areas, exit points from the brain and cranial cavity, fiber composition, innervation areas. 6. X, XI cranial nerves: nuclei, branches, innervation areas, exit points from the brain and cranial cavity, fiber composition, innervation areas.	AI-1 GPC-5 AI-2 GPC-5					Interview (discussion)
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32.	Spinal nerves. 1. Spinal nerve: formation, branches. Posterior rami of the spinal nerves. Anterior rami of the thoracic nerves. 2. Cervical plexus: formation, cutaneous and muscular branches. Phrenic nerve. Areas of innervation. 3. Brachial plexus: formation, cutaneous and muscular branches. Areas of innervation. 4. Anterior rami of the thoracic nerves. 5. Brachial plexus: formation, short and long branches, areas of innervation. 6. Lumbar plexus: formation, branches, areas of innervation. 7. Sacral plexus: formation. Short branches, areas of innervation. Long branches of the sacral plexus, areas of innervation. 8. Coccygeal plexus: formation, branches, areas of innervation. 9. Principles of innervation of the human body (internal organs, vessels, muscles, joints, skin).	AI-1 GPC-5 AI-2 GPC-5					Interview (discussion)
			2		4		

33.	The autonomic nervous system. 1. Anatomy and functions of the suprasegmental division of the autonomic nervous system. 2. The central part of the segmental division of the autonomic nervous system: nuclei and their histotopography. 3. The peripheral part of the segmental division of the autonomic nervous system: nodes, branches, fibers, and nerves. 4. Structural features of the autonomic nervous system, the autonomic reflex arc, and their differences from the somatic part of the nervous system. 5. Division of the autonomic nervous system into three parts: sympathetic, parasympathetic, and metasympathetic. 6. Anatomy of the sympathetic part of the autonomic nervous system: centers, nodes, branches, fibers, nerves, and plexuses. 7. Anatomy and functional purpose of the parasympathetic centers of the autonomic (vegetative) nervous system. 8. Anatomy of the parasympathetic ganglia of the head. 9. Anatomy of the parasympathetic parts of the oculomotor, facial, glossopharyngeal, and vagus cranial and sacral spinal nerves. 10. Structural features and functions (differences) of the three parts of the autonomic (vegetative) nervous system – sympathetic, parasympathetic, and metasympathetic. 11. Anatomy of the vagus nerve: nuclei, exit sites from the brain and cranial cavity, topography, branches, fiber composition, innervation areas.	AI-1 GPC-5 AI-2 GPC-5					Interview (discussion)
			2				

34.	Anatomy of the visual analyzer. The eye and associated structures: extrinsic muscles, lacrimal apparatus, eyelids, conjunctiva. 1. General anatomical and functional characteristics and classification of the structures of the visual analyzer. Definition of the term "organ of vision." 2. The eyeball: external structure. 3. The fibrous coat of the eyeball: structure and functions. 4. The choroid. The accommodation apparatus: structure and functions. 5. The inner coat of the eyeball: structure and functions. 6. The nucleus of the eyeball: the lens, anterior and posterior chambers, and the vitreous body, their structure and functions. Refractive media of the eye. 7. The aqueous humor: formation, outflow, and functions. 8. Accessory structures of the eye. 9. The extraocular muscles: structure, topography, and functions. 10. The eyelids, conjunctiva, and eyebrow: structure and functions. 11. The Lacrimal Apparatus: Structure and Function	AI-1 GPC-5 AI-2 GPC-5			2		Interview (discussion)
35.	Anatomy of the organ of hearing and balance: the outer, middle, and inner ear. 1. General anatomical and functional characteristics and classification of the structures of the auditory analyzer. 2. The outer ear: the auricle, the external auditory canal, and the eardrum. 3. The middle ear: - the tympanic cavity, its walls, openings, and contents; - the auditory ossicles, their structure, joints, ligaments, and muscles of the auditory ossicles; - the auditory tube; - the mammillary antrum, mammillary cells. 4. The inner ear: the concept of the "vestibulocochlear organ," the bony labyrinth, and the membranous labyrinth.	AI-1 GPC-5 AI-2 GPC-5			2		Interview (discussion)

36.	Functional anatomy of the heart. Arteries and veins of the heart. 1. The cardiovascular system. General anatomical and functional characteristics. Division into circulatory and lymphatic, circulatory - into arterial and venous. 2. Mediastinum – definition, division into sections. 3. Topography of mediastinal organs. 4. General anatomy of the heart. 5. Structure of the heart chambers in relation to their function in the systemic and pulmonary circulations. 6. Structure of the heart wall. 7. Structure and function of the cardiac conduction system. 8. Arteries of the heart. 9. Veins of the heart. 10. Pericardium. 11. Topography of the heart: - cardiac syntopy, - projection of the heart borders on the anterior chest wall (with percussion), - projection of the heart valves on the anterior chest wall and their auscultation sites (with auscultation).	AI-1 GPC-5 AI-2 GPC-5	2		4	Interview (discussion)
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37.	Vessels of the pulmonary and systemic circulations. 1. Vessels of the pulmonary circulation. 2. Aorta: sections and their topography. 3. Branches of the aortic arch and thoracic descending aorta: - brachiocephalic trunk, its topography, branches; - common carotid artery, its topography, branches; - external carotid artery, branches (anterior, posterior, medial, terminal) and areas of blood supply. 4. Thoracic aorta, its topography, branches, and areas of blood supply. 5. Internal carotid artery, its anatomy, topography, branches, and areas of blood supply. 6. Subclavian artery, its anatomy, topography, branches, and areas of blood supply. 7. Anastomoses between the branches of the external, internal carotid arteries, and subclavian artery. 8. Topography of the abdominal aorta, classification of its branches. 9. Parietal branches of the abdominal aorta and their blood supply areas. 10. Visceral branches of the abdominal aorta and their blood supply areas. 11. Blood supply to the organs and walls of the abdominal cavity. 12. Arterial anastomoses in the abdomen and their significance.	AI-1 GPC-5 AI-2 GPC-5			4		Interview (discussion)
38.	Arteries of the upper and lower limbs. 1. The axillary artery, its topography, branches, and areas of blood supply. 2. The brachial artery, its topography, branches, and areas of blood supply. 3. Arteries of the forearm: topography, branches, and areas of blood supply. 4. Arteries of the hand, arterial palmar arches, and their significance. 5. Arterial anastomoses of the upper limb and their significance. 6. The common, external, and internal iliac arteries, their topography, branches, and areas of blood supply. 7. The femoral artery, its topography, branches, and areas of blood supply. 8. Blood supply to the organs and walls of the pelvis and perineum. 9. Blood supply to the hip joint and thigh muscles. 10. Arterial anastomoses in the pelvis and thigh and their significance.	AI-1 GPC-5 AI-2 GPC-5			4		Interview (discussion)

39.	Anatomy of the venous system. The superior vena cava system. 1. Anatomy and topography of the superior vena cava, its sources and tributaries. 2. Anatomy and topography of the azygos and hemiazygos veins, their tributaries. 3. Anatomy and topography of the brachiocephalic veins, their tributaries. 4. Anatomy and topography of the internal jugular vein, its extracranial and intracranial tributaries. 5. Anatomy and topography of the sinuses of the dura mater, diploic and emesar veins. 6. Anatomy and topography of the subclavian vein, its tributaries. 7. Directions of blood outflow from the brain, its membranes, the bones of the skull, the organs of vision, hearing, and balance, the organs of the head, neck, thoracic cavity, and chest wall. 8. Anatomy and topography of the veins of the upper limb: superficial and deep. 9. Pathways of blood outflow through the veins from the fingers, muscles, joints, and bones of the upper limb.	AI-1 GPC-5 AI-2 GPC-5	2		2		Interview (discussion)
40.	The inferior vena cava system. 1. Anatomy and topography of the inferior vena cava, its sources and tributaries. 2. Anatomy and topography of the common, external, and internal iliac veins, and their tributaries. 3. Anatomy and topography of the veins of the lower limb: superficial and deep. 4. Pathways of blood outflow through the veins from the fingers, muscles, joints, and bones of the lower limb. 5. Anatomy and topography of the portal vein and its tributaries. 6. Directions of blood outflow from the organs and walls of the pelvis and abdominal cavity. 7. Formation and location of cava-caval anastomoses. 8. Formation and location of portocaval anastomoses.	AI-1 GPC-5 AI-2 GPC-5	2		2		Interview (discussion)

41.	Anatomy of the lymphatic system. 1. General structure and functioning of lymphatic drainage pathways. 2. Structural and functional features of lymphatic capillaries and vessels. Principles of lymphatic vessel classification. 3. Lymph nodes: classification, structure, and functions. Concept of lymphatic drainage regionality. 4. Anatomy and topography of lymphatic ducts, formation, and lymph collection areas. 5. Lymphatic vessels, trunks, and lymph nodes of the head and neck. 6. Directions of lymph drainage from the head, organs of hearing, vision, nasal cavity, teeth, tongue, salivary glands, pharynx, larynx, thyroid gland, and neck regions, as well as their regional lymph nodes. 7. Lymphatic vessels, trunks, and lymph nodes of the thoracic cavity.	AI-1 GPC-5 AI-2 GPC-5			2		Interview (discussion)
	TOTAL in 3 Semester		18		54	36	
42.	Anatomy of the lymphatic system. 1. Lymphatic vessels, trunks, and lymph nodes of the thoracic cavity. 2. Lymph drainage routes from the heart, lungs and bronchi, esophagus, chest walls, and their regional lymph nodes. 3. Lymph drainage routes from the mammary gland and its regional lymph nodes. 4. Lymphatic vessels, trunks, and regional lymph nodes of the upper limb and lymph drainage routes in the upper limb. 5. Lymphatic vessels, trunks, and lymph nodes of the abdominal cavity. 6. Lymphatic vessels and lymph nodes of the pelvis. 7. Directions of lymph drainage from the stomach, intestinal sections, liver, gallbladder, pancreas, kidneys and adrenal glands, bladder, internal and external genitalia, and their regional lymph nodes.	AI-1 GPC-5 AI-2 GPC-5			2	53	Interview (discussion)

43.	Anatomy of the lymphatic system. 1. Lymphatic vessels and lymph nodes of the lower limb, directions of lymph drainage in the lower limb. 2. General anatomical and functional characteristics of the lymphoid system. 16. Thymus: topography, structure, function, blood supply, innervation, regional lymph nodes. 3. Secondary organs of the lymphoid system: topography, general structural features, and functions. 4. Pharyngeal tonsils: topography, structure, blood supply, innervation, regional lymph nodes. 5. Spleen: topography, structure, function, blood supply, innervation, regional lymph nodes.	AI-1 GPC-5 AI-2 GPC-5			2		Interview (discussion)
44.	Anatomy of the digestive system. 1. General anatomy of the internal organs. 2. Systems of internal organs. 3. Parenchymatous, tubular (hollow) organs, principles of structure. 4. Serous membranes, serous cavities. 5. Lines and regions of the chest and abdomen. 6. Topography of the internal organs (holotopy, skeletotopy, syntopy). 7. The digestive system, division into the alimentary canal (tract) and major digestive glands. Sections of the alimentary canal.	AI-1 GPC-5 AI-2 GPC-5	2		4		Interview (discussion)
45.	Anatomy of the Digestive System. 1. Oral Cavity: Vestibule of the Oral Cavity, Oral Cavity Proper, and Their Walls. Cheeks. 2. Lips. Oral Diaphragm. 3. Teeth: Structure, Types of Teeth. Primary and Permanent Teeth. Teeth Formula. 4. Teeth. Timing of Teeth Eruption and Replacement. 5. Tongue: Parts, Structure. 6. Oral Glands. Major Salivary Glands: Structure, Topography, and Excretory Ducts. 7. Palate. Hard Palate, Soft Palate, and Pharynx.	AI-1 GPC-5 AI-2 GPC-5			2		Interview (discussion)

46.	Anatomy of the Digestive System. 1. Pharynx: Topography, Parts, Wall Structure, and Communications. Pharyngeal Tonsils (Waldeyer-Pirogov Ring). 2. Esophagus: Topography, Parts, Constrictions, and Wall Structure. 3. Abdominal Regions. 4. Stomach: topography, parts, wall structure.	AI-1 GPC-5 AI-2 GPC-5			2		Interview (discussion)
47.	Anatomy of the digestive system. Small and large intestine. Liver. Pancreas. 1. Sections and structure of the small intestine in relation to its function: 1.1. General plan of the wall structure, division into sections, 1.2. Structural features and topography of the duodenum, 1.3. Structural features and topography of the jejunum and ileum. 2. Sections and structure of the large intestine in relation to its function: 1.1. General plan of the wall structure, division into sections, 1.2. Structural features and topography of the cecum, 1.3. Structural features and topography of the sections of the colon. 3. Differences between the small and large intestines. 4. Structural features and topography of the rectum. 5. Liver: structure, topography, ligaments. 6. Features of blood circulation in the liver. 7. Gallbladder: structure, topography. 8. Anatomy of the biliary tract. 9. Pancreas: structure, topography.	AI-1 GPC-5 AI-2 GPC-5			4		Interview (discussion)
48.	Abdominal cavity and peritoneum. 1. Structure of the peritoneum. 2. Peritoneal cavity. Floors of the peritoneal cavity (superior, inferior). Topography of organs lying at their levels. Layers of the peritoneum. 3. Location of organs in relation to the peritoneum: a) extraperitoneal; b) mesoperitoneal; c) intraperitoneal. 4. Derivatives of the peritoneum: omentums, ligaments, mesentery, their structure and topography. 5. Bursae, pockets, and pits of the peritoneal cavity, their structure and topography, and practical significance.	AI-1 GPC-5 AI-2 GPC-5			4		Interview (discussion)

49.	Anatomy of the respiratory system. 1. Respiratory system, division into respiratory tract and respiratory organs. Parts of the respiratory tract. 2. Nose. Nasal cavity: nasal vestibule, nasal turbinates and nasal passages, respiratory and olfactory regions. Paranasal sinuses. 3. Larynx: topography, laryngeal cavity, cartilages, ligaments, joints, muscles, fibroelastic membrane of the larynx, vocal apparatus. 4. Trachea: topography, parts, cartilages, and ligaments of the trachea. 5. Bronchi. Bronchial tree. Main bronchi. Structure and topography. 6. Lungs, structure. 7. Lung lobes. Bronchopulmonary segments. 8. Intrapulmonary branches of the bronchial tree. 9. Alveolar tree. Structural and functional unit of the lung. 10. Features of blood circulation in the lungs. 11. The serous membrane of the lung (pleura): - visceral (pulmonary) - parietal: diaphragmatic, costal, mediastinal - pleural cavity, pleural sinuses. 12. Borders of the lungs (superior, posterior, anterior, inferior). 13. Borders of the pleural sacs (superior, posterior, anterior, inferior)	AI-1 GPC-5 AI-2 GPC-5					Interview (discussion)
			2		4		

50.	Anatomy of the urinary system. 1. The genitourinary system: reasons for combining the urinary and reproductive systems into a single system. 2. The urinary system. Division into the organs of urine formation and the urinary tract. The importance of the urinary organs for the body's vital functions. 2. The kidneys: structure and topography. 3. The renal membranes, the renal fixing apparatus. 4. Features of blood circulation in the kidney. 5. The structure of the nephron and its function. 6. Segmental structure of the kidney. 7. The urinary tract: intrarenal (collecting ducts, straight renal tubules, papillary ducts, minor and major calyces, renal pelvis), extrarenal: - ureter: structure, topography, parts, constrictions; - urinary bladder: structure, topography, relationship to the peritoneum; - Urethra (male and female): structure, topography.	AI-1 GPC-5 AI-2 GPC-5	2		4		Interview (discussion)
51.	Anatomy of the reproductive system. The male reproductive system. 1. General anatomical and functional characteristics of the reproductive system. 2. Topographical and anatomical subdivision of the male reproductive organs. 3. Testicle: structure, membranes, function. 4. Epididymis: structure, topography, function. 5. Vas deferens: structure, topography. 6. Seminal vesicles: structure, topography, function. 7. Prostate: structure, topography, function. 8. Testicular descent and origin of the scrotal layers. 9. Spermatic cord: membranes, structure, topography. 7. Bulbourethral glands. 10. Penis: structure. 11. Semen excretion pathways.	AI-1 GPC-5 AI-2 GPC-5	2		2		Interview (discussion)

52.	Anatomy of the reproductive system. The female reproductive system. 1. Topographical and anatomical division of the female reproductive organs into internal and external. 3. Ovary: structure, topography, and function. 4. Ovarian appendages: structure and topography. 5. Uterus: structure, topography, and function. Age-related changes in the uterus. 6. Fallopian tube: structure, topography, and function. Structural features in relation to the function performed. 7. Vagina: structure and topography. 8. Labia majora. 9. Labia minora. 10. Vestibule of the vagina and vestibular glands. 11. Clitoris: structure. 12. Definition of the perineum. 13. Anatomy of the muscles and fascia of the urogenital diaphragm. 14. Anatomy of the muscles and fascia of the pelvic diaphragm. 15. The anal-rectal pit and its contents. 16. Function of the male and female perineum.	AI-1 GPC-5 AI-2 GPC-5	2		2		Interview (discussion)
53.	Development and functional anatomy of internal organs 1. Development of the oral cavity and its derivatives during ontogenesis. Anomalies. 2. Derivatives of the primitive intestine during ontogenesis. Anomalies. 3. Transformations of the ventral and dorsal mesenteries of the embryo. Anomalies. 4. Development of the nasal cavity during ontogenesis. Anomalies. 5. Development of the respiratory system during ontogenesis. Structural variations and anomalies. 6. Development of the urinary system during ontogenesis. Structural variations and anomalies. 7. Development of the male genital organs during ontogenesis. Structural variations and anomalies. 8. Development of female reproductive organs during ontogenesis. Structural variations and anomalies.	AI-1 GPC-5 AI-2 GPC-5			4		Interview (discussion)

54.	Anatomy of the endocrine glands. 1. Anatomical and functional characteristics of the endocrine glands. 2. Classification of the endocrine glands. 3. Neurogenic group of glands: - pituitary gland: structure, topography, functions, age-related characteristics; - pineal gland: structure, topography, functions, age-related characteristics.	AI-1 GPC-5 AI-2 GPC-5	2		4		Interview (discussion)
55.	Anatomy of the endocrine glands. 1. Branchiogenic group of glands: - thyroid gland: structure, topography, functions, age-related characteristics; - parathyroid glands: structure, topography, functions, age-related characteristics; 2. Endocrine pancreas: structure, topography, functions, age-related characteristics.	AI-1 GPC-5 AI-2 GPC-5			2		Interview (discussion)
56.	Anatomy of the endocrine glands. 1. Glands of mesodermal origin: - interrenal glands (adrenal cortex, accessory adrenal glands): structure, topography, functions, age-related characteristics; - endocrine glands (testicle, ovary): structure, topography, functions, age-related characteristics. Anatomy of the endocrine glands.	AI-1 GPC-5 AI-2 GPC-5	2		2		Interview (discussion)
57.	Anatomy of the endocrine glands. 1. Adrenal glands: adrenal medulla, glomus (paraganglia): structure, topography, functions, age-related characteristics. 2. The adrenal gland as an organ: structure, topography, functions.	AI-1 GPC-5 AI-2 GPC-5	2		2		Interview (discussion)
58.	General integument. Mammary gland. 1. Anatomy of the general integument. 2. Mammary gland: topography, structure, functions.	AI-1 GPC-5 AI-2 GPC-5			2		Interview (discussion)
	TOTAL in 4 Semester		16		48	53	
	TOTAL		50		150	133	

Interview (discussion),

Colloquium

Presentation of laboratory work

Presentation of abstract

Presentation of report

Presentation of project

Testing

6. Assessment Tools Fund for the Discipline (Module)

The assessment tools fund (ATF) for the discipline (module) Anatomy is based on the list of competencies to be mastered, indicating the stages of their formation in the process of mastering

the discipline (module). The ATF provides an objective control over the achievement of the planned learning outcomes. The ATF includes:

- A description of indicators and criteria for evaluating competencies at various stages of their formation, a description of evaluation scales;
- Methodological materials determining the procedures for evaluating knowledge, skills, abilities and (or) work experience characterizing the stages of competency formation;
- Standard control tasks and other materials necessary for assessing knowledge, skills, and the level of mastery of the formed competencies in the process of mastering the discipline (module).

The ATF is an appendix to this discipline (module) program.

7. Methodological Guidelines for Students on Mastering the Discipline

When starting work, each student must take into account the following provisions.

The discipline (module) is structured on a thematic principle; each topic represents a logically completed section.

The lecture material is dedicated to the consideration of key, basic provisions of the courses and the clarification of learning tasks assigned for the independent work of students.

Practical classes are conducted with the aim of consolidating the mastered information, acquiring skills for its application in solving practical problems in the relevant subject area.

Laboratory works are aimed at gaining practical experience in the relevant subject area.

The independent work of students is aimed at the independent study of additional material, preparation for practical and laboratory classes, as well as the execution of all types of independent work.

In order to successfully master the discipline, it is important to complete all types of independent work employing the recommended sources of information.

8. Educational, Methodological, and Informational Support for the Discipline

8.1. List of Main and Additional Literature Required for Mastering the Discipline (Module)

8.1.1. List of Main Literature:

Frederic H. Martini, Ph.D., University of Hawaii at Manoa, Michael J.

1. Timmons, M.S., Moraine Valley Community College, Robert B. Tallitsch, Ph.D. with William C. Ober, M.D Human anatomy. 2023. – 901 p.

8.1.2. List of Additional Literature:

1. Frank H. Netter MD Atlas of Human Anatomy 7th Edition. 2014. – 791 p.
2. Mark Nielsen, Shawn Miller Atlas of Human Anatomy. 2019. – 354 p.

8.2. List of Educational and Methodological Support for the Independent Work of Students in the Discipline (Module)

1. Study guide: Guidelines for students on organizing and conducting independent work in the discipline "Anatomy." – Stavropol: SKFU, 2026.
2. Study guide: Guidelines for performing laboratory work in the discipline "Anatomy." – Stavropol: SKFU, 2026.

8.3. List of Resources of the Information and Telecommunications Network **Internet Required for Mastering the Discipline (Module)**

1. <http://rudocor.net/> - Medical portal
2. <http://www.e-reading.club/> - Large online library
3. <http://www.pubmed.com/> - Database of full-text medical articles
4. <http://www.spravocnikpolekarstvam.ru/> - Free online pharmacological reference
5. <https://dic.academic.ru/> - Dictionaries and encyclopedias
6. <https://www.rmj.ru/> - Russian Medical Journal

9. List of Information Technologies Employed through the Discipline (Module), Including a List of Software and Information Reference Systems

When delivering lectures, computer equipment and demonstrations of multimedia presentation materials are used. In seminars and practical classes, students deliver presentations prepared by them during the hours of independent work.

Information Reference Systems:

Information-reference and information-legal systems used in the study of the discipline:

1.	Electronic library system "University Library Online" - www.biblioclub.ru (Agreement No. 50-04/19 on the provision of information services from 13.05.2019)
2.	The electronic library system "IPRbooks" (LICENSE AGREEMENT No. 5168/19 dated 13.05.2019 for the provision of access to the electronic library system IPRbooks. Organization: IP Ar Media LLC)
3	"eLIBRARY.RU ": [Scientific Electronic Library]. – URL: http://elibrary.ru
4	. Information and legal portal "Garant" - http://www.garant.ru/
5	Legal reference system Russian legislation and judicial practice are freely available - http://www.pravo.ru/

Software:

1.	Alt Workstation 10
2.	Alt Workstation K
3.	Alt Server
4.	Office software package – P7-Office

10. Description of the Material and Technical Resources Required for the Educational Process for the Discipline (Module)

Lecture classes	A classroom equipped with multimedia equipment and technical training facilities.
Laboratory classes	A Human Anatomy training laboratory equipped with the necessary equipment and teaching aids: a 16-seat classroom furniture set with the necessary set of macroscopic specimens: an angioneurological cadaver, a set of individual human skeletal bones, a human skeleton, a set of individual skull bones, a classical skull, a skull with disarticulated bones, a skull in sections, macroscopic specimens held in 10% formalin solution, and sets of joint specimens. A set of internal organs. A virtual anatomy table, "Pirogov's Table."
Practical classes	A classroom, equipped with multimedia equipment and technical training facilities.
Independent work	A room for the independent work of students, equipped with computer hardware with the capability to connect to the Internet network and provide access to the electronic information and educational environment of the university.
Practical training	Carried out in the structural subdivisions of the university and (or) in organizations engaged in activities matching the profile of the respective training program, including its structural subdivision.

11. Specific Features of Mastering the Discipline (Module) by Persons with Disabilities

Students with disabilities shall be provided with special textbooks, teaching aids, and didactic materials, special technical training facilities for collective and individual use, the services

of an assistant (helper) providing the necessary technical assistance to the students, as well as the services of sign language interpreters and tactile sign language interpreters.

The mastery of the discipline (module) by students with disabilities may be organized jointly with other students, as well as in separate groups.

Mastering the discipline (module) by students with disabilities is to be carried out taking into account the peculiarities of psychophysical development, individual capabilities, and health status.

In order to ensure the accessibility of higher education under the educational program for persons with disabilities, the following is provided during the mastery of the discipline (module):

- 1) for persons with visual impairments:
 - the presence of an assistant offering the student the necessary technical assistance, taking into account individual features (help taking the workplace, moving around, reading and formatting the task, including writing under dictation),
 - written tasks, as well as instructions on the procedure for their execution, are formatted in an enlarged font,
 - special textbooks, teaching aids, and didactic materials (having a large font or audio files), individual uniform lighting of at least 300 lux, if necessary, a magnifying device is provided to the student to complete the task;
- 2) for persons with hearing impairments:
 - the presence of an assistant providing the student with the necessary technical assistance, taking into account individual characteristics (helps to take a workplace, move around, read and format the task, including writing with dictation),
 - the availability of sound-amplifying equipment for collective use is ensured; if necessary, sound-amplifying equipment for individual use is provided to the student;
 - provision with proper sound means of reproducing information is ensured;
- 3) for persons with musculoskeletal disorders (including severe motor function impairments of the upper limbs or the absence of upper limbs):
 - written tasks are performed on a computer with specialized software or are dictated to an assistant;
 - at the request of the student, tasks may be performed verbally.

12. Specific Features of Implementing the Discipline with the Use of Distance Learning Technologies and E-Learning

Subject to Part 1 of Article 16 of the Federal Law of December 29, 2012, No. 273-FZ On Education in the Russian Federation, e-learning shall be viewed as the arrangement of educational activities employing information contained in databases and used in the implementation of educational programs, as well as information technologies, technical means, and information and telecommunication networks that ensure the processing and transmission of the specified information via communication lines, and the interaction of students and pedagogical workers.

Remote (distance) learning technologies are understood as educational technologies implemented mainly with the use of information and telecommunication networks during the indirect (at a distance) interaction of students and pedagogical workers.

The implementation of the discipline may be carried out with distance learning technologies and e-learning in full or in part. The components of the Educational And Methodological Complex (EMC) of the discipline (working program of the discipline, assessment and methodological materials, forms of attestation) implemented with the use of distance learning technologies and e-learning contain an indication of their use.

When arranging educational activities with distance learning technologies and e-learning, asynchronous and synchronous methods of interaction between participants in educational relations via the information and telecommunications network Internet may be offered.

When using distance learning technologies and e-learning, the schedule for the discipline shall indicate: methods of interaction among participants in educational relations via the information and telecommunications network Internet (VCC – videoconferencing, ET – electronic testing); links to the electronic information and educational environment of NCFU, to educational platforms and resources of other organizations to which open access is provided via the information and telecommunications network Internet; for synchronous learning – the time of online classes and instructors; for asynchronous learning – the authors of online courses.

When arranging intermediate attestation with distance learning technologies and e-learning, the Methodological Recommendations on the use of technical means ensuring the objective reliability of results when conducting intermediate and state final attestation for higher education educational programs – Bachelor's Degree programs, Specialist's Degree programs, and Master's Degree programs with distance learning technologies are used (Letter of the Ministry of Science and Higher Education of Russia dated December 7, 2020, # MN-19/1573-AN On sending methodological recommendations).

The implementation of the discipline with the use of e-learning and distance learning technologies is carried out using the electronic information and educational environment of NCFU, to which students are provided access via the information and telecommunications network Internet, or using the resources of other organizations, including platforms providing services for videoconferencing, online meetings, and distance learning (MTS-Link), as well as using the capabilities of social networks to carry out communication between students and instructors.

The educational and methodological support for a discipline shall be ensured with e-learning and distance learning technologies includes the working program presented in electronic form, educational and methodological manuals or a course of lectures, methodological guidelines for performing various types of educational activities of students provided for by the discipline, and other educational and methodological materials posted in the information and educational environment of NCFU.