Ministry of Health of the Russian Federation

Federal State Budgetary Educational Institution of Higher Education "North-Western State Medical University named after I.I. Mechnikov" of the Ministry of Health of the Russian Federation

(FSBEI HE NWSMU named after I.I. Mechnikov of the Ministry of Health of the Russian Federation)

Course Work Program

«Anatomy»

Specialty: 30.05.01 General Medicine (English Medium Instruction — EMI)

Specialization: Organization and provision of primary healthcare to the adult population in medical organizations.

Language of instruction: English

2021

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The course work program was discussed at a meeting of the Department of Human Morphology on May 1, 2021,
Protocol No.

Head of the Department _____ / Starchyk D.A/

Approved by the Guidelines Commission for specialty 31.05.01 General Medicine on May 11, 2021.
Chairperson_____ / Bakulin I.G. /

Reviewed by the Guidelines Council and recommended for approval by the Academic Council on May 20, 2021.
Chairperson_____ / Artyushkin S.A./

Update Date:

Content

1. Course objectives 4
2. Role of the course within the educational program structure 4
3. List of intended learning outcomes of the course, aligned with those of the educational program. 4
4. Course scope and types of educational activities 5
5. Course content, structured by sections (topics), indicating the number of academic hours and types of classes. 5
6. Guideline recommendations for students on course study **Ошибка! Закладка не определена.**
7. Assessment methods 15
8. List of recommended literature and online resources for the course 15
9. List of IT tools for studying the course, including software, professional databases, and information reference systems. ..... **Ошибка! Закладка не определена.**
10. Material and technical support for the course ..... **Ошибка! Закладка не определена.**
Appendix A ..... **Ошибка! Закладка не определена.**

1. Course objective

The objective of studying the "Anatomy" course is to develop specialists' knowledge of the structure, topography, blood supply, and innervation of internal organs; the structure and functional principles of the musculoskeletal system; sense organs; as well as the methods of acquiring morphological knowledge, all of which are essential for further study of other fundamental medical disciplines.

2. Role of the course within the educational program structure

The "Anatomy" course is part of the mandatory components of Block 1 "Disciplines (modules)" of the main professional educational program for the specialty 31.05.01 General Medicine (specialty level: MD / MBBS), specialization: Organization and provision of primary healthcare to the adult population in medical organizations. The course is obligatory for this specialty level.

3. List of intended learning outcomes of the course, aligned with those of the educational program

Code and name of the Competencies	Code and name of the competency achievement indicator
GPC-5. Possesses the ability to evaluate morphofunctional, physiological states, and pathological processes in the human body for the purpose of carrying out professional tasks.	**AI-3 GPC-5.3.** Ability to determine the main indicators of a patient's physical development and functional status, taking into account age-related anatomical and physiological characteristics.
GPC-10. Capable of understanding the principles of operation of modern information technologies and use them to solve professional tasks.	**AI-1 GPC-10.1.** Applies modern information technologies, including Internet researches, to solve professional tasks.

Competency achievement indicator code	Learning Outcomes (Assessment Indicators)	Assessment methods
AI-3 GPC-5.3.	**Knows** the main bony landmarks, the projection of internal organs, major vessels, and nerves onto the body surface. **Able to determine** the main bony landmarks, the projection of internal organs, major vessels, and nerves onto the body surface. **Possesses the skill** to determine the main bony landmarks, the projection of internal organs, major vessels, and nerves onto the body surface.	Tests; Control questions; Cases; course work
AI-1 GPC-10.1.	**Knows** the basics of international anatomical terminology, the list of main professional databases, and information reference systems.	Tests; Control questions; Cases; course work

4. Course scope and types of educational activities

Type of educational work	Course workload	Semesters		
		I	II	III
Students' direct work with the teacher	**220**	**72**	**72**	**76**
Classroom work:	216	72	72	72
Lectures (L)	72	24	24	24
Practical Classes (PC)	144	48	48	48
Independent work:	**140**	**36**	**36**	**68**
During the period of theoretical training	108	36	36	36
Exam preparation	32	-	-	32
Interim assessment: Exam, including passing, and group consultations	4	-	-	4
Total course workload: Academic hours	**360**			
Credit units	**10**			

5. Course content, structured by sections (topics), indicating the number of academic hours and types of learning activities.

5.1. Content of the course sections

Serial No.	Title of the course section	Annotated content of the course section	List of competencies formed during the study of the section
1	Introduction	Introduction to the study of human anatomy. Subject, goals, and objectives of various fields in anatomy. The place of anatomy among other disciplines, its significance for medicine. Traditional and modern methods of anatomical research. Contemporary scientific directions in anatomy. History of anatomy. Main anatomical schools.	GPC-5 GPC-10
2	Patterns of human body structure and stages of its development.	Early stages of human development. Levels of organization of living matter. Concept of human constitution. Constitutional features. Age-related periodization of human development stages. Main stages of human embryogenesis. Germ layers and their derivatives. Embryonic organogenesis. Critical periods in human ontogenesis.	GPC-5 GPC-10
3	Skeletal system; System of joints/articulations	General anatomy of the skeleton, its development. Anatomy of the skeleton: axial skeleton, appendicular skeleton. Bone as an organ. Structure of bones. Classification of bones. Development of bones. Changes in the shape and structure of bones over age periods. Influence of social and biological factors on skeletal development and structure. General anatomy and development of bone articulations (joints). Classification of	GPC-5 GPC-10

		articulations. Anatomy of the articulations of the trunk and limbs.	
		Phylogenetic and ontogenetic development of the skull. Structure of the bones and topography of the facial and cranial parts of the skull across various age periods. Main structural variations and anomalies of the skull. Anatomy of skull articulations.	
4	Muscular system	General anatomy of the muscular system. Muscle as an organ. Structure of skeletal muscle. Accessory apparatus of muscles. Classification of muscles by shape, structure, and functions. Influence of function on muscle structure. Sources and patterns of muscle development. Possible structural variations, anomalies, and developmental defects. Anatomy of the muscles of the head, neck, trunk, and limbs.	GPC-5 GPC-10
5	Systems of the internal organs	Definition of the concept "internal organs." Concept of serous membranes. Classification of internal organs by systems. Definition of the concept "topography of internal organs." Principles of structure of hollow and parenchymatous organs. Relationship between the structure and function of internal organs. Anatomy of the organs of the digestive system. Anatomy of the peritoneum. Sources and patterns of development of the oral cavity, its organs, and the pharynx. Possible structural variations, anomalies, and developmental defects. Patterns of development of derivatives of the truncal and caudal intestines. Possible structural variations, anomalies, and developmental defects. Anatomy and development of the organs of the respiratory system. Anatomy of the mediastinum. Anatomy and development of the organs of the urinary system. Anatomy and development of the female reproductive system. General plan of structure of the female reproductive system. Anatomy and development of the male reproductive system. Anatomy of the perineum and its sex-specific features.	GPC-5 GPC-10
6	Endocrine glands; Lymphoid [Immune] system	Anatomy and development of endocrine glands and endocrine elements within organs. Classifications of endocrine glands. Anatomy of the organs of the lymphoid (immune) system, their classification. Structural features of the primary organs of the lymphoid (immune) system. Anatomy of the secondary organs of the lymphoid (immune) system. Regional lymph nodes.	GPC-5 GPC-10
7	Cardio-vascular system	Anatomy of the heart. Organization of human circulation during the embryonic, fetal, and postnatal periods of ontogenesis. The relation	GPC-5 GPC-10

		between the structure of the cardiovascular system's divisions and their functions. Anatomy of arteries and veins. Sources and patterns of development of the heart, arteries, and veins. Possible structural variations, anomalies, and developmental defects. Anatomy and development of the lymphatic channels.	
8	Nervous system	Functional significance of the nervous system. General organization of the nervous system. The concept of the reflex arc as the structural and functional unit of the nervous system. Classification of reflex arcs. Development of the nervous system in phylo- and ontogenesis. Anatomy of the spinal cord and its meninges. Anatomy of the brain and its meninges. Anatomy of spinal nerves. Anatomy of cranial nerves. Anatomy of the autonomic nervous system.	GPC-5 GPC-10
9	Sense organs	Anatomy of the organ of smell. Anatomy of the organ of taste. Anatomy of the eye and its associated structures. Anatomy of the ear.	GPC-5 GPC-10

5.2. Lecture syllabus

Serial No.	Course section title	Themes of the lectures	Active learning methods*	Workload (academic hours)
1	Introduction	L.1. Introduction to the study of human anatomy. History of anatomy.	Lab teamwork	1
2	Patterns of human body structure and stages of its development.	L.2 Levels of organization of living organisms. Early stages of ontogenesis. Concept of human constitution.	Lab teamwork	1
3	Skeletal system; System of joints/articulations	L.3 General anatomy of the skeletal system. Classification and development of bones.	Lab teamwork	1
		L.4 General anatomy of the articular system (joints). Classification and development of articulations (joints).	Lab teamwork	1
		L.5 Functional anatomy of the bones and joints of the trunk.	Lab teamwork	1
		L.6 Functional anatomy of the bones and joints of the limbs.	Lab teamwork	1
		L.7 Radiographic anatomy of the skeleton.	Lab teamwork	1
		L.8 Phylogenetic and ontogenetic development of the skull.	Lab teamwork	1
		L.9 Individual, age-related, and sex-specific features of the skull. Skull articulations.	Lab teamwork	2
4	Muscular system	L.10 General anatomy of the	Lab	2

		muscular system.	teamwork	
5	Systems of the internal organs	L.11 Introduction to the study of splanchnology.	Lab teamwork	2
		L.12 Functional anatomy and development of the digestive system – oral cavity and its organs, pharynx, esophagus, stomach.	Lab teamwork	2
		L.13 Functional anatomy and development of the digestive system – small intestine, large intestine, pancreas..	Lab teamwork	2
		L.14 Functional anatomy and development of the peritoneum.	Lab teamwork	2
		L.15 Functional anatomy and development of the organs of the respiratory system.	Lab teamwork	2
		L.16 Functional anatomy and development of the organs of the urinary system.	Lab teamwork	2
		L.17 Functional anatomy and development of the organs of the male reproductive system.	Lab teamwork	2
		L.18 Functional anatomy and development of the organs of the male reproductive system.	Lab teamwork	2
		L.19 Functional anatomy and development of the organs of the female reproductive system. Anatomy of the perineum.	Lab teamwork	2
6	Endocrine glands; Lymphoid [Immune] system	L. 20 Anatomy and development of endocrine glands and endocrine elements within organs. Classifications of endocrine glands. L.21 Functional anatomy and development of the lymphoid [immune] system.	Lab teamwork	2
7	Cardio-vascular system	L.22 Introduction to the study of the cardiovascular system. Organization of human circulation in the postnatal period of ontogenesis. Functional anatomy and development of the heart.	Lab teamwork	2
		L.23 Functional anatomy and development of arteries.	Lab teamwork	2
		L.24 Functional anatomy and development of veins. Characteristics of circulatory organization during the antenatal period of ontogenesis.	Lab teamwork	2
		L.25 Functional anatomy and development of the lymphatic channels.	Lab teamwork	2
8	Nervous system	L.26 Introduction to the study of the nervous system. Development of the nervous system.	Lab teamwork	2
		L.27 Functional anatomy of the	Lab	2

		spinal cord and its meninges.	teamwork	
		L.28 Functional anatomy of the rhombencephalon (hindbrain).	Lab teamwork	2
		L.29 Functional anatomy of the midbrain. Functional anatomy of the diencephalon (interbrain).	Lab teamwork	2
		L.30 Functional anatomy of the telencephalon (endbrain). Relief of the pallium. Cortical ends of analyzers.	Lab teamwork	2
		L.31. Functional anatomy of the telencephalon (endbrain). Anatomy of the meninges of the brain.	Lab teamwork	2
		L.32 Overview of the conducting pathways of the central nervous system.	Lab teamwork	2
		L.33 Functional anatomy of spinal nerves.	Lab teamwork	2
		L.34 Functional anatomy of cranial nerves (pairs I-VI).	Lab teamwork	2
		L.35 Functional anatomy of cranial nerves (pairs VII-XII).	Lab teamwork	2
		L.36 Functional anatomy of the autonomic nervous system. Parasympathetic division.	Lab teamwork	2
		L.37 Functional anatomy of the autonomic nervous system. Sympathetic division.	Lab teamwork	2
		L.38 Overview of the innervation of the soma and internal organs.	Lab teamwork	2
9	Sense organs	L.39 Functional anatomy of the vision organ .	Lab teamwork	2
		L.40 Functional anatomy of the hearing organ.	Lab teamwork	2
ИТОГО:				72

5.3. Practical session syllabus

Serial No.	Course section title	Themes of the practical session	Active learning methods	Assessment methods	Workload (academic hours)
1	Skeletal system; System of joints/articulations	PS.1 Anatomical terminology. Anatomy of the bones of the trunk. Radiographic anatomy of the bones of the trunk.	Group discussion	Tests; Control questions; Cases;	2
		PS.2 Anatomy of the bones of the shoulder girdle and the free part of the upper limb. Anatomy of the bones of the pelvic girdle and the free part of the lower	Group discussion	Tests; Control questions; Cases;	2

		limb. Radiographic anatomy of the bones of the upper and lower limbs.			
		PS.3 Classification of bone articulations (joints). Articulations of the vertebral column. The vertebral column as a whole. Articulations of the thoracic cage. The thoracic cage as a whole. Radiographic anatomy of the articulations of the trunk.	Group discussion	Tests; Control questions; Cases;	2
		PS.4 Articulations of the bones of the upper limb. Articulations of the bones of the lower limb. The pelvis as a whole. Radiographic anatomy of the articulations of the bones of the upper and lower limbs.	Group discussion	Tests; Control questions; Cases;	2
		PS.5 Bones of the neurocranium (braincase).	Group discussion	Tests; Control questions; Cases;	2
		PS.6 Bones of the viscerocranium (facial skeleton). The skull as a whole: topography of the skull, articulations of the skull bones. Radiographic anatomy of the skull.	Group discussion	Tests; Control questions; Cases;	2
		PS.7 Assessment session for sections: "Skeletal system", "Articular system".	Group discussion	Tests; Control questions; Cases;	2
2	Muscular system	PS.8 Muscles, fasciae, and topography of the back, chest (thorax), and abdomen. Diaphragm.	Group discussion	Tests; Control questions; Cases;	2
		PS.9 Muscles, fasciae, and topography of the head and neck.	Group discussion	Tests; Control questions; Cases;	4
		PS.10 Muscles, fasciae, and topography of the upper limb.	Group discussion	Tests; Control questions; Cases;	4
		PS.11 Muscles, fasciae,	Group	Tests;	4

		and topography of the lower limb.	discussion	Control questions; Cases;	
		PS.12 Assessment session for the topic: "Muscular System".	Group discussion	Tests; Control questions; Cases;	4
3	Systems of the internal organs	PS.13 Anatomy of the digestive system – oral cavity and its organs. Pharynx. Esophagus. Stomach.	Group discussion	Tests; Control questions; Cases;	4
		PS.14 Anatomy of the digestive system – Small and large intestines. Liver. Pancreas. Radiographic anatomy of the organs of the digestive system.	Group discussion	Tests; Control questions; Cases;	4
		PS.15 Anatomy of the peritoneum.	Group discussion	Tests; Control questions; Cases;	4
		PS.16 Anatomy of the organs of the respiratory system. Anatomy of the pleura. Anatomy of the mediastinum. Radiographic anatomy of the organs of the respiratory system and mediastinum.	Group discussion	Tests; Control questions; Cases;;	4
		ПЗ.17 Anatomy of the organs of the urinary system.	Group discussion	Tests; Control questions; Cases;	4
		PS. 18 Anatomy of the organs of the male reproductive system.			
		PS. 19 Anatomy of the organs of the female reproductive system. Anatomy of the perineum. Sex differences. Radiographic anatomy of the reproductive organs.	Group discussion	Tests; Control questions; Cases;	4
4	Endocrine glands; Lymphoid [Immune] system	PS.20 Anatomy of Endocrine Glands; Anatomy of the organs of the Lymphoid [Immune] System.	Group discussion	Tests; Control questions; Cases;	4
5	Systems of the internal organs. Endocrine glands;	PS.21 Assessment session for sections: "Systems of Internal	Group discussion	Tests; Control questions;	4

	Lymphoid [Immune] system	Organs", "Endocrine Glands", "Lymphoid [Immune] System".		Cases;	
6	Cardio-vascular system	PS.22 Anatomy of the heart. Anatomy of the pericardium. Ascending aorta. Arteries and veins of the heart. Radiographic anatomy of the heart.	Group discussion	Tests; Control questions; Cases;	4
		PS.23 Aortic arch and its branches. Common carotid artery, external and internal carotid arteries and their branches. Subclavian artery and its branches. Descending aorta and its branches. Aortic bifurcation. Common iliac artery.	Group discussion	Tests; Control questions; Cases;	4
		PS.24 Arteries of the upper limb. Arteries of the pelvis and lower limb. Radiographic anatomy of arteries.	Group discussion	Tests; Control questions; Cases;	4
		PS.25 Superior vena cava system. Inferior vena cava system. Hepatic portal vein system. Venous anastomoses. Radiographic anatomy of veins. Anatomy of the lymphatic channels.	Group discussion	Tests; Control questions; Cases;	4
		PS.26 Assessment session for sections: "Angiology", "Lymphoid [Immune] System".	Group discussion	Tests; Control questions; Cases;	4
7	Nervous system	PS.27 Anatomy of the spinal cord and its meninges.	Group discussion	Tests; Control questions; Cases;	4
		PS. 28. General overview of the brain. Anatomy of the rhombencephalon (hindbrain).	Group discussion	Tests; Control questions; Cases;	4
		PS.29 Midbrain. Diencephalon (Interbrain).	Group discussion	Tests; Control questions; Cases;	4
		PS.30 Telencephalon (Endbrain): Relief of the pallium (cerebral	Group discussion	Tests; Control questions;	4

		cortex). Cortical ends of analyzers. Meninges of the brain and spinal cord. Intermeningeal spaces. CSF circulation. Central nervous system structures visualized by diagnostic imaging methods.		Cases;	
		PS.31 Telencephalon (Endbrain): Basal nuclei of the hemispheres. White matter of the hemispheres. Meninges of the brain and spinal cord. Intermeningeal spaces. CSF circulation.	Group discussion	Tests; Control questions; Cases;	4
		PS.32 Overview of the Conducting Pathways of the Brain and Spinal Cord.	Group discussion	Tests; Control questions; Cases;	4
		PS.33 Assessment session for the topic: "Central Nervous System".	Group discussion	Tests; Control questions; Cases;	4
		PS.34 Spinal nerves. Posterior rami of spinal nerves. Anterior rami of spinal nerves. Cervical and brachial plexuses. Dissection of nerves.	Group discussion	Tests; Control questions; Cases;	4
		PS.35 Anterior rami of thoracic spinal nerves. Lumbar plexus. Sacral plexus.	Group discussion	Tests; Control questions; Cases;	4
		PS.36 Cranial nerves: Pairs I-VI.	Group discussion	Tests; Control questions; Cases;	4
		PS.37 Cranial nerves: Pairs VII-XII.	Group discussion	Tests; Control questions; Cases;	4
		PS.38 Autonomic nervous system: parasympathetic division of the autonomic nervous system. Autonomic nervous system: sympathetic division of the autonomic nervous system.	Group discussion	Tests; Control questions; Cases;	4
8	Sense organs	PS.39 Organ of smell. Eye and its associated structures. Ear. VIII pair	Group discussion	Tests; Control questions;	4

		of cranial nerves. Auditory and vestibular analyzers.		Cases;	
		PS.40 Assessment session for topics: "Peripheral Nervous System", "Sense Organs".	Group discussion	Tests; Control questions; Cases;	4
				TOTAL:	144

5.4.Seminars syllabus - Not provided

5.5.Thematic Plan of Laboratory Work - Not provided

5.6. Self-Study:

Serial No.	Course section title	Types of Self-Study Activities	Assessment methods	Workload (academic hours)
1	Introduction	Work with lecture materials; Work with academic literature	Tests; Control questions; Cases; Course work;	1
2	Patterns of structure and stages of development of the human body	Work with lecture materials; Work with academic literature	Tests; Control questions; Cases; Course work;	1
3	Skeletal system; System of joints/articulations	Work with lecture materials; Work with academic literature	Tests; Control questions; Cases; Course work;	16
4	Mascular system	Work with lecture materials; Work with academic literature	Tests; Control questions; Cases; Course work;	10
5	Systems of the internal organs	Work with lecture materials; Work with academic literature	Tests; Control questions; Cases; Course work;	20
6	Endocrine glands; Lymphoid [Immune] system	Work with lecture materials; Work with academic literature	Tests; Control questions; Cases; Course work;	4
7	Cardio-vascular system	Work with lecture materials; Work with academic literature	Tests; Control questions; Cases; Course work;	22
8	Nervous system	Work with lecture materials; Work with academic literature	Tests; Control questions; Cases; Course work;	28
9	Sense organs	Work with lecture materials; Work with	Tests; Control questions; Cases;	6

		academic literature	Course work;	
			TOTAL:	108
			Exam preparation :	32

5.6.1. Topics for the course work

1. Anatomical and clinical aspects of the musculoskeletal system.
2. Anatomical and clinical aspects of the skull.
3. Anatomical and clinical aspects of internal organs.
4. Anatomical and clinical aspects of the cardiovascular system.
5. Anatomical and clinical aspects of the nervous system and sense organs.

6. Guideline recommendations for students on course study.

Students should consistently prepare for ongoing assessment during practical sessions. This includes both answering control questions (or parts of them) and demonstrating mastery of the material on anatomical specimens by solving case studies.

Complete test assignments posted on the MOODLE system in accordance with the course schedule and thematic plan.

Actively use other educational and guideline materials available on the MOODLE system.

To successfully pass the interim assessment (the exam), it is necessary to thoroughly study and engage with all assessment methods: questions for oral examination, case studies, and practical skill demonstrations.

7. Assessment methods

Assessment methods for the course, used for ongoing monitoring of academic progress and interim assessment of students, include examples of assessment methods (Appendix A to the course work program), as well as the procedure and grading criteria.

8. List of recommended literature and online resources for the course

8.1. literature :

1. Human Anatomy: – Moscow : GEOTAR-Media, 2012. – 527 p. : col. ill.

2. Human Anatomy: Textbook. In 2 volumes. Vol. 2 / ed. by M. N. Sapin. – Moscow : GEOTAR-Media, 2012. – 454 p. : col. ill.

3. S. S. Mikhailov. Human Anatomy: Textbook. In 2 volumes. Vol. 1 / S. S. Mikhailov. – 5th ed. – Moscow : GEOTAR-Media, 2013. – 702 p. : col. ill. + electronic optical disc (CD-ROM).

4. S. S. Mikhailov. Human Anatomy: Textbook. In 2 volumes. Vol. 2 / S. S. Mikhailov. – 5th ed. – Moscow : GEOTAR-Media, 2013. – 603 p. : col. ill. + electronic optical disc (CD-ROM).

5. Prywes M. G. Human Anatomy: a textbook for Russian and foreign university and faculty students / M. G. Prywes, N. K. Lysenkov, V. I. Bushkovich. – 12th ed., revised and expanded. – St. Petersburg : SPbMAPO, 2014. – 720 p. : ill. – (Textbook Literature for Medical University Students).

6. Sinelnikov R. D. Atlas of Human Anatomy. In 4 volumes. Vol. 1. The Study of Bones, Joints and Muscles / R. D. Sinelnikov, Ya. R. Sinelnikov, A. Ya. Sinelnikov. – 7th ed., revised. – Moscow : Novaya Volna, 2009. – 343 p. : ill.

7. Sinelnikov R. D. Atlas of Human Anatomy. In 4 volumes. Vol. 1. The Study of Bones, Joints and Muscles / R. D. Sinelnikov, Ya. R. Sinelnikov, A. Ya. Sinelnikov. – 7th ed., revised. – Moscow : Novaya Volna, 2010. – 343 p. : ill.

8. Human Anatomy in Tests / ed. by N.R. Karelina, P.V. Pugach, and A.R. Khisamutdinova. St. Petersburg: SZGMU, 2012. – 352 p.

9. Pugach, P. V. Syndesmology. Craniology. Situational Problems for Students: Educational and Methodological Manual / P.V. Pugach, T.N. Varyasina, E.A. Moskalev. - St. Petersburg: Publishing House of North-Western State Medical University named after I.I. Mechnikov, 2016. – 40 p.

10. Situational Problems in Human Anatomy: Textbook. Sapin M.R., Chava S.V., Kupriyanov I.E. Moscow: Dzhangar, 2011, 2012.

11. Shurkus, E.A. The Cardiovascular System. Situational Problems for Students: Educational and Methodological Manual / E.A. Shurkus, D.N. Busarin. – St. Petersburg: Publishing House of North-Western State Medical University named after I.I. Mechnikov, 2016. – 188 p.

12. Shurkus, E.A. The Respiratory System. Situational Problems for Students Enrolled in the Specialization (Specialist Degree) "General Medicine": Educational and Methodological Manual / E.A. Shurkus. – St. Petersburg: Publishing House of North-Western State Medical University named after I.I. Mechnikov, 2015. – 68 p.

13. Shurkus, E.A. The Urogenital Apparatus. Situational Problems for Students Enrolled in the Specialty "General Medicine": Educational and Methodological Manual / E.A. Shurkus. – St. Petersburg: Publishing House of North-Western State Medical University named after I.I. Mechnikov, 2015. – 72 p.

14. Shurkus, E.A. The Peripheral Nervous System. Situational Problems for Students of the Faculty of General Medicine: Educational and Methodological Manual / E.A. Shurkus. – St. Petersburg: Publishing House of North-Western State Medical University named after I.I. Mechnikov, 2013. – 36 p.

15. Shurkus, E.A. The Digestive System. Situational Problems for Students Enrolled in the Specialization (Specialist Degree) "General Medicine": Educational and Methodological Manual / E.A. Shurkus. – St. Petersburg: Publishing House of North-Western State Medical University named after I.I. Mechnikov, 2015. – 96 p.

16. Shurkus, E.A. The Central Nervous System. Situational Problems for Students Enrolled in the Specialization (Specialist Degree) "General Medicine": Educational and Methodological Manual / E.A. Shurkus. – St. Petersburg: Publishing House of North-Western State Medical University named after I.I. Mechnikov, 2013. – 36 p.

17. Rohen, J., Yokochi, C., & Lütjen-Drecoll, E. Color Atlas of Anatomy. USA, 4th Edition, [Electronic Book], Williams & Wilkins, 1997.

18. Human Anatomy: in 2 volumes. Vol. I : textbook / M. R. Sapin, D. B. Nikityuk, V. N. Nikolenko, S. V. Klochkova ; ed. by M. R. Sapin. - Moscow : GEOTAR-Media, 2024. - 528 p. - ISBN 978-5-9704-8136-3. - Electronic text // EBS "Student's Consultant" : [website]. - URL : https://www.studentlibrary.ru/book/ISBN9785970481363.html

19. Human Anatomy: in 2 volumes. Vol. II : textbook / M. R. Sapin, D. B. Nikityuk, V. N. Nikolenko, S. V. Klochkova ; ed. by M. R. Sapin. - Moscow : GEOTAR-Media, 2024. - 464 p. - ISBN 978-5-9704-8137-0. - Electronic text // EBS "Student's Consultant" : [website]. - URL : https://www.studentlibrary.ru/book/ISBN9785970481370.html

20.Gaivoronsky, I. V. Normal Human Anatomy. In 2 volumes: Textbook for Medical Universities / I. V. Gaivoronsky. - 9th ed., revised and expanded. - St. Petersburg: SpetsLit, 2016. - Vol. 1. - 568 p.

21. Gaivoronsky, I. V. Normal Human Anatomy. In 2 volumes: Textbook for Medical Universities / I. V. Gaivoronsky. - 9th ed., revised and expanded. - St. Petersburg: SpetsLit, 2016 - Vol. 2. - 453 p.

22. Sinelnikov, R. D. Atlas of Human Anatomy: in 3 vols. Vol. 1, The Study of Bones, Joints, and Muscles / R. D. Sinelnikov, Ya. R. Sinelnikov, A. Ya. Sinelnikov. – 8th ed., revised. - Moscow : Novaya Volna : Publisher Umerenkov, 2024. – 488 p.
23. Sinelnikov, R. D. Atlas of Human Anatomy: in 3 vols. Vol. 1, The Study of Bones, Joints, and Muscles / R. D. Sinelnikov, Ya. R. Sinelnikov, A. Ya. Sinelnikov; ed. A. G. Tsybulkin. – 8th ed., revised. - Moscow : Novaya Volna, 2022. – 488 p.
24. Lymphatic System: Textbook / E. A. Shurkus, T. N. Varyasina, S. V. Kruglov [et al.] ; ed. D. A. Starchik ; Ministry of Health of the Russian Federation, North-Western State Medical University named after I. I. Mechnikov, Department of Human Morphology. – St. Petersburg : Publishing House of North-Western State Medical University named after I. I. Mechnikov, 2021. – 122 p. https://sdo.szgmu.ru/pluginfile.php/768841/mod_resource/content/1/%D0%9A%D0%BE%D0%BD%D0%B4%D0%B0%D0%BA%D0%BE%D0%B2%D0%B0_%D0%A1%D0%BE%D0%B2%D1%80%D0%B5%D0%BC%D0%B5%D0%BD%D0%BD%D1%8B%D0%B5%20%D0%BC%D0%B5%D1%82%D0%BE%D0%B4%D1%8B%20%D1%81%D0%BA%D1%80%D0%B8%D0%BD%D0%B8%D0%BD%D0%B3%D0%B0%20%D0%B8%20%D0%B4%D0%B8%D1%84%D1%84.%20%D0%B4%D0%B8%D0%B0%D0%B3%D0%BD%D0%BE%D1%81%D1%82%D0%B8%D0%BA%D0%B8%20%20%D1%82%D1%83%D0%B1%D0%B5%D1%80%D0%BA%D1%83%D0%BB%D0%B5%D0%B7%D0%B0%20%282%29.pdf
25. Spinal Nerves: Textbook / D. A. Starchik, E. A. Shurkus, D. N. Busarin [et al.] ; Ministry of Health of the Russian Federation, North-Western State Medical University named after I. I. Mechnikov of the Ministry of Health of Russia, Department of Human Morphology. – St. Petersburg : Publishing House of North-Western State Medical University named after I. I. Mechnikov, 2022. – 170 p.
https://sdo.szgmu.ru/pluginfile.php/818200/mod_resource/content/1/%D0%94.%20%D0%90.%20%D0%A1%D1%82%D0%B0%D1%80%D1%87%D0%B8%D0%BA%2C%20%D0%95.%20%D0%90.%20%D0%A8%D1%83%D1%80%D0%BA%D1%83%D1%81%2C%20%D0%94.%20%D0%9D.%20%D0%91%D1%83%D1%81%D0%B0%D1%80%D0%B8%D0%BD%2C%20%D0%95.%20%D0%92.%20%D0%9A%D0%B0%D0%B7%D0%B0%D0%BD%D1%86%D0%B5%D0%B2%D0%B0%2C%20%D0%9E.%20%D0%92.%20%D0%9F%D0%B8%D0%BC%D0%B8%D0%BD%D0%BE%D0%B2%D0%B0%2C%20%D0%98.%20%D0%A1.%20%D0%9C%D0%B5%D0%BB%D1%8C%D0%BD%D0%B8%D1%87%D0%B5%D0%BD%D0%BA%D0%BE%20%D0%A1%D0%9F%D0%98%D0%9D%D0%9D%D0%9E%D0%9C%D0%9E%D0%97%D0%93%D0%9E%D0%92%D0%AB%D0%95%20%D0%9D%D0%95%D0%A0%D0%92%D0%AB.pdf
26. Starchik, D. A. Arthrosyndesmology: Textbook / D. A. Starchik, E. A. Shurkus, I. S. Melnichenko ; Ministry of Health of the Russian Federation, North-Western State Medical University named after I. I. Mechnikov of the Ministry of Health of Russia, 2023. – 198 p.
https://sdo.szgmu.ru/pluginfile.php/919871/mod_resource/content/1/%D0%A1%D1%82%D0%B0%D1%80%D1%87%D0%B8%D0%BA_%D0%90%D1%80%D1%82%D1%80%D0%BE%D1%81%D0%B8%D0%BD%D0%B4%D0%B5%D1%81-%D1%86%D0%B2%D0%B5%D1%82.pdf
27. Functional Myology: Textbook / D. A. Starchik, E. A. Shurkus, D. N. Busarin [et al.]. – St. Petersburg: Publishing House of North-Western State Medical University named after I. I. Mechnikov of the Ministry of Health of Russia, 2024. – 124 p.
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28. Prywes, M. G. Human Anatomy: textbook / M. G. Prywes, N. K. Lysenkov, V. I. Bushkovich. - 13th ed., corrected and expanded. - Moscow: GEOTAR-Media, 2024. - 896 p. - ISBN 978-5-9704-8756-3. - Electronic text // EBS "Student's Consultant": [website]. - URL: https://www.studentlibrary.ru/book/ISBN9785970487563.html
29. Bilich, G. L. Human Anatomy. Atlas. In 3 volumes. Volume 1. The Locomotor System: textbook / Bilich G. L., Kryzhanovsky V. A. - Moscow: GEOTAR-Media, 2013. - 800 p. - ISBN 978-5-9704-2607-4. - Electronic text // URL: https://www.studentlibrary.ru/book/ISBN9785970426074.html
30. Bilich, G. L. Human Anatomy. In 3 volumes. Volume 2: Compact Atlas / Bilich G. L., Kryzhanovsky V. A., Nikolenko V. N. - Moscow: GEOTAR-Media, 2013. - 696 p. - ISBN 978-5-

9704-2540-4. - Electronic text // EBS "Student's Consultant": [website]. - URL: https://www.studentlibrary.ru/book/ISBN9785970425404.html
31. Bilich, G. L. Human Anatomy: Atlas. Volume 3 / Bilich G. L., Kryzhanovsky V. A. - Moscow: GEOTAR-Media, 2013. - 624 p. - ISBN 978-5-9704-2349-3. - Electronic text // EBS "Student's Consultant": [website]. - URL: https://www.studentlibrary.ru/book/ISBN9785970423493.html
32. Kolesnikov, L. L. Textbook of Human Anatomy. In 3 vol. Vol. 1. Locomotor System / L. L. Kolesnikov, D. B. Nikityuk, S. V. Klochkova, I. G. Stelnikova. - Moscow : GEOTAR-Media, 2020. - 288 p. - ISBN 978-5-9704-5763-4. - Electronic text // EBS "Student's Consultant": [website]. - URL : https://www.studentlibrary.ru/book/ISBN9785970457634.html
33. Kolesnikov, L. L. Textbook of Human Anatomy. In 3 vol. Vol. 2. Splanchnology and Cardiovascular System / L. L. Kolesnikov, D. B. Nikityuk, S. V. Klochkova, I. G. Stelnikova. - Moscow : GEOTAR-Media, 2020. - 320 p. - ISBN 978-5-9704-5764-1. - Electronic text // EBS "Student's Consultant": [website]. - URL : https://www.studentlibrary.ru/book/ISBN9785970457641.html
34. Kolesnikov, L. L. Textbook of Human Anatomy. In 3 vol. Vol. 3. Nervous System. Esthesiology / L. L. Kolesnikov, D. B. Nikityuk, S. V. Klochkova, I. G. Stelnikova. - Moscow : GEOTAR-Media, 2020. - 216 p. - ISBN 978-5-9704-5811-2. - Electronic text // EBS "Student's Consultant": [website].- URL : https://www.studentlibrary.ru/book/ISBN9785970458112.html

8.2. Resources of the "Internet" information and telecommunications network:

1. Anatomy of the Living Human. http://anatom.hut.ru/anatomy/home.htm.
2. Website www.medbook.net.ru/22.shtml Medical Literature.
3. Anatomy Atlases. Library of anatomy information. Curated by Ronald A. Bergman, Ph.D., www.anatomyatlases.org..
4. Website www.uke.uni-hamburg.de/medizinische-fakultaet/voxel-man/index_ENG.php University Medical Center Hamburg-Eppendorf. VOXEL-MAN Group. Germany.
5. Author's project of an anatomy course from the University of Washington School of Medicine. Carol Teitz, Mike Richardson, 2005, http://courses.washington.edu/hubio553/totrad/index.html.
6. http://www.nlm.nih.gov/exhibition/dreamanatomy/index.html. National Library of Medicine. National Institutes of Health. 2004. The Netherlands..
7. Website "Interactive Atlas of Human Anatomy" http://anatomy.tv.
8. Ovid Library Platform http://ovid.com.
9. Website of the International Association of Morphologists http://mam-ima.com/

9. List of IT tools for studying the course, including software, professional databases, and information reference systems

9.1. List of IT tools used in the educational process:

Serial No.	Course section title	Information Technologies
	Introduction Patterns of structure and stages of development of the human body Skeletal system; System of joints/articulations Mascular system Systems of the internal organs Endocrine glands; Lymphoid [Immune] system	*Publication of educational materials in the EERS of the North-Western State Medical University named after I.I. Mechnikov of the Russian Ministry of Health,* ***https://moodle.szgmu.ru/course/view.php?id=88***

	Cardio-vascular system Nervous system Sense organs	

9.2. ***List of software used in the educational process (licensed and open-source software, including software of domestic production):***

Serial No.	Name of the software product	License Validity Period	Documents confirming the right to use software products
Licensed software			
1.	ESET NOD 32	1 year	State Contract № 07/2020
2.	MS Windows 8 MS Windows 8.1 MS Windows 10 MS Windows Server 2012 Datacenter - 2 Proc MS Windows Server 2012 R2 Datacenter - 2 Proc MS Windows Server 2016 Datacenter Core	Unlimited	State Contract № 30/2013-O; State Contract № 399/2013-OA; State Contract № 07/2017-EA.
3.	MS Office 2010 MS Office 2013	Unlimited	State Contract № 30/2013-OA; State Contract № 399/2013-OA.
4.	Academic LabVIEW Premium Suite (1 User)	Unlimited	State Contract № 02/2015
Domestically produced licensed software			
1.	Antiplagiat	1 year	State Contract № 2409
2.	«WEBINAR (Webinar)» VERSION 3.0	1 year	Contract № 347/2020-M
3.	«Electronic Learning Environment 3KL»	1 year	Contract № 348/2020-M
4.	TrueConf Enterprise	1 year	Contract № 396/2020-EA
Open-source software			
1.	Google Chrome	Unlimited	Open License Agreement GNU GeneralPublicLicense
2.	NVDA	Unlimited	Open License Agreement GNU GeneralPublicLicense
Domestically produced open-source software			
1.	Moodle	Unlimited	Open License Agreement GNU GeneralPublicLicense

9.3. List of professional databases and information reference systems:

Serial No.	Name of the software product	License Validity Period	Documents confirming the right to use software products	Access mode for students with disabilities
1.	Consultant Plus	1 year	Contract № 655/2020-EA	-
2.	EBS «Student's	1 year	Contract	http://www.studmedlib.ru/

	Consultant»		№ 307/2020-EA	
3.	EMB «Doctor's Consultant»	1 year	Contract № 281/2020-EA	http://www.rosmedlib.ru/
4.	EBS «ibooks.ru/ibooks.ru»	1 year	Contract № 06/2020	https://ibooks.ru
5.	EBS «IPRBooks»	1 year	Contract № 08/2020-3K	http://www.iprbookshop.ru/special
6.	EBS «Bucap»	1 year	Contract № 05/2020	https://www.books-up.ru/
7.	EBS «Lan Publishing House»	1 year	Contract № 395/2020-EA	https://e.lanbook.com/

10. Material and technical support for the course

Classrooms for conducting lectures, group and individual consultations, ongoing academic progress monitoring, and interim assessment of students, equipped with teaching equipment and technical aids: St. Petersburg, Piskaryovskiy ave, 47, bldg. AL, bldg. R, North-Western State Medical University named after I.I. Mechnikov of the Russian Ministry of Health;
Equipment: Blackboard (chalk); teacher's desk, teacher's chair, student desks, student chairs.
Teaching Technical Aids: Slide projector, laptop, multimedia projector, teacher's laptop.
Specialized Teaching Technical Aids for Inclusive Education: Roger Pen (Individual wireless transmitter in the form of a pen), Roger MyLink (Signal receiver for the Roger Pen system) (for students with hearing impairments.); IntelliKeys (Wired keyboard with Russian Braille font and a matte black finish), (St. Petersburg, Piskaryovskiy ave, 47, bldg. R (Building 9), rooms No. 18, 19, North-Western State Medical University named after I.I. Mechnikov of the Russian Ministry of Health).

Classrooms for conducting seminar-type classes, group and individual consultations, ongoing progress monitoring, and interim assessment of students, equipped with teaching equipment and technical aids: St. Petersburg, Piskaryovskiy ave, 47, bldg. AL, bldg. R, North-Western State Medical University named after I.I. Mechnikov of the Russian Ministry of Health;
Board (chalk); teacher's desk, teacher's chair, student desks, student chairs.
Anatomical Models – 92 units.
Educational Charts100 units.
Bone Specimens – 200 units.
Internal Organ Specimens – 150 units.
Brain Specimens – 30 units
Cadavers– 4
Museum Specimens – 960 items.
Medical Equipment (for practical skills training):
Sectional tables – 19 units.
Medical instruments – 50 units.
Technical Training Tools: Multimedia projector, teacher's laptop, system unit, monitor, slide projector.
Teaching Technical Aids: Slide projector, laptop, multimedia projector, teacher's laptop.
Specialized Teaching Technical Aids for Inclusive Education: Roger Pen (Individual wireless transmitter in the form of a pen), Roger MyLink (Signal receiver for the Roger Pen system) (for students with hearing impairments.); IntelliKeys (Wired keyboard with Russian Braille font and a matte black finish), (St. Petersburg, Piskaryovskiy ave, 47, bldg. R (Building 9), rooms No. 18, 19, North-Western State Medical University named after I.I. Mechnikov of the Russian Ministry of Health).

Classes for self-study, equipped with computers, internet access and providing access to the University's electronic information-educational environment: St. Petersburg, Piskaryovskiy ave, 47, bldg. AE (Building 32), room No. 1, bldg. R (Building 9), rooms No. 18, 19, North-Western State Medical University named after I.I. Mechnikov of the Russian Ministry of Health.

Appendix A

Ministry of Health of the Russian Federation

Federal State Budgetary Educational Institution of Higher Education "North-Western State Medical University named after I.I. Mechnikov" of the Ministry of Health of the Russian Federation

(FSBEI HE NWSMU named after I.I. Mechnikov of the Ministry of Health of the Russian Federation)

Assessment methods

(for conducting ongoing monitoring of student progress and interim assessment)

Specialty	30.05.01 General Medicine (English Medium Instruction — EMI)
Specialization	Organization and provision of primary healthcare to the adult population in medical organizations
Name of the discipline:	Anatomy

Saint Petersburg – 2021

1. List of intended learning outcomes of the course

Competency achievement indicator code	Learning Outcomes (Assessment Indicators)	Assessment methods
AI-3 GPC-5.3.	**Knows** the main bony landmarks, the projection of internal organs, major vessels, and nerves onto the body surface.	Tests; Control questions; Cases; Course work;
	Able to determine the main bony landmarks, the projection of internal organs, major vessels, and nerves onto the body surface. **Possesses the skill** to determine the main bony landmarks, the projection of internal organs, major vessels, and nerves onto the body surface.	
AI-1 GPC-10.1.	**Knows** the basics of international anatomical terminology, the list of main professional databases, and information reference systems.	Tests; Control questions; Cases; Course work;

2. Examples of methods and criteria for the purpose of current assessing

2.1. Examples of entry assessment

1. Human Anatomy as a Fundamental Science. The Place of Human Anatomy Among Biomedical Disciplines. The Importance of Anatomical Knowledge for Clinical and Preventive Medicine.
2. Modern Directions in Anatomy, Principles and Methods of Anatomical Research. Classical and Modern Visualization Methods in Anatomy.

Assessment criteria, pass/fail grading scale.

Grade	Description
«pass»	Demonstrates a complete understanding of the problem. All requirements for the assignment have been fulfilled.
«fail»	Shows a lack of understanding of the problem. Many of the assignment's requirements have not been met. No response.

2.2. Examples of the control questions:

AI-3 GPC-5.3
Question Title: Question 1: INDICATE WHAT GIVES BONES ELASTICITY AND RESILIENCE.
Select one answer:

a. magnesium salts
b. **ossein**
c. phosphorus salts
d. fat
e. calcium salts

Question Title: Question 2: THE PROXIMAL END OF THE TIBIA CONSISTS OF:
Choose one or more answers:

1. intercondylar eminence (tibial spine)

2. lateral and medial condyles
3. anterior and posterior intercondylar fossae (areas)

Title of the question: Question 3: INDICATE THE ANATOMIC STRUCTURES CHARACTERISTIC OF ALL JOINTS

Select one or more answers:
a. Intracapsular ligaments
b. Joint capsule
c. Joint cavity
d. Articular surfaces
e. Synovial fluid

AI-1 GPC-10.1
Title of the question: Question 4: WHICH OPENINGS CONNECT THE ORBIT WITH THE PTERYGOPALATINE FOSSA:

Select one answer:
1. Inferior orbital fissure
2. Superior orbital fissure
3. Pterygoid canal
4. Foramen rotundum

Title of the question: Question 5: INDICATE THE MUSCLES OF THE LATERAL ABDOMINAL WALL

Select one or more answers:
a. Pyramidalis muscle
b. Quadratus lumborum muscle
c. Transversus abdominis muscle
d. Rectus abdominis muscle
e. External and internal oblique muscles of the abdomen

Title of the question: Question 6: INDICATE THE PARTS OF THE PANCREAS

Select one or more answers:
a. Body
b. Head
c. Neck
d. Tail
e. Ampulla

Title of the question: Question 7: INDICATE THE CHAMBER OF THE HEART WHERE THE PULMONARY CIRCULATION ENDS

Select one answer:
a. Right atrium
b. Right ventricle
c. Left auricle
d. Left ventricle
e. Left atrium

Title of the question: Question 8: INDICATE THE ANATOMICAL STRUCTURES BELONGING TO THE RHOMBENCEPHALON.

Select one or more answers:

a. Midbrain
b. Cerebellum
c. Diencephalon
d. Medulla oblongata
e. Pons (Pons Varolii)

Assessment criteria, grading scale for the *tests*

Grade		**Description**
«Excellent»	5	Completed in full – 90%-100%
«Good»	4	Not completed in full – 80%-89%
«Satisfactory»	3	Completed with deviation – 70%-79%
«Unsatisfactory»	2	Partially completed – 69% and less of correct answers.

2.3. Examples of course work topics

AI-3 GPC-5.3, AI-1 GPC-10.1

1. Anatomical and clinical aspects of the musculoskeletal system.;
2. Anatomical and clinical aspects of the skull..
3. Anatomical and clinical aspects of internal organs..
4. Anatomical and clinical aspects of the cardiovascular system..
5. Anatomical and clinical aspects of the nervous system and sensory organs.

Assessment criteria, grading scale for the *course work*

Grade		**Description**
«Excellent»	5	All requirements for writing and defending the report have been met: the problem is identified and its relevance is justified, a brief analysis of various viewpoints on the issue is provided and a personal position is logically presented, conclusions are formulated, the topic is fully covered, the required length is met, formatting requirements are followed, correct answers are given to additional questions.
«Good»	4	The main requirements for the report and its defense have been met, but there are shortcomings; in particular, there are inaccuracies in the presentation of the material; a logical sequence in reasoning is lacking; the required length of the report is not met; there are oversights in formatting; incomplete answers were given to additional questions during the defense.
«Satisfactory»	3	There are significant deviations from the requirements for the report; in particular: the topic is covered only partially; factual errors are present in the content of the report or in the answers to additional questions; a conclusion is missing during the defense.
«Unsatisfactory»	2	The topic of the report is not covered, a substantial misunderstanding of the problem is revealed, or the report is not submitted at all.

2.4. Approximate list of control questions.

AI-3 GPC-5.3, AI-1 GPC-10.1

1**.** Skull: Anterior and Posterior Cranial Fossa. Their walls, connections, contents.

2. Sources and patterns of development of secondary lymphoid (immune) system organs. Possible structural variants, anomalies, and developmental malformations. Structural features in children, adolescents, and adults.
3. Conducting pathways of conscious proprioception; their topography in various parts of the spinal cord and brain..

Assessment criteria, grading scale for *control questions*.

Grade		**Description**
«Excellent»	5	Knows all the educational material, has an excellent understanding and has firmly mastered it. Gives correct, conscious, and confident answers to questions (within the curriculum). In oral responses, uses a literate language and makes no mistakes.
«Good»	4	Knows all the required educational material, understands it well and has firmly mastered it. Answers questions (within the curriculum) without difficulty. In oral responses, uses a literary language and does not make gross errors.
«Satisfactory»	3	Knows the basic educational material. Has difficulty answering questions (within the curriculum). In oral responses, makes errors in presenting the material and in speech construction.
«Unsatisfactory»	2	Does not know most of the educational material, typically answers only leading questions from the instructor, and lacks confidence. Makes frequent and gross errors in oral responses.

2.5. Examples of cases.

AI-3 GPC-5.3.

Case. During a medical examination of high school students, the doctor notes that one teenager has straight posture, the second has stooped posture, and the third has a lateral curvature of the thoracic spine to the right (right-sided scoliosis). The doctor checks the mobility of the lumbar spine by asking the boys to bend forward (flexion), backward (extension), perform lateral bends, as well as turns to the right and left.

1. What physiological curves does the spinal column have? (Name the sequence of their formation after birth and the curve that has gender-specific features.)
2. Relative to which axis do the physiological curves of the spinal column exist: sagittal or frontal?
3. Which pronounced physiological curve does stooped posture correspond to?
4. What groups of muscles provide the movements of the lumbar spine listed in the task? Which organ and vessels of the posterior mediastinum can change their position relative to the posterior median line in cases of lateral curvature of the spinal column?
5. What organ and vessels of the posterior mediastinum can change their position relative to the posterior median line in cases of lateral curvature of the spinal column?

Case. A 30-year-old patient has anemia. To obtain red bone marrow for examination, a puncture of a bone located on the anterior wall of the chest is performed. The cartilages of the true ribs attach to this bone. The puncture needle is inserted into the middle part of the bone at the level where the cartilages of the third ribs attach.

1. Which bone of the torso does the doctor use to obtain red bone marrow, and into which part of the bone is the puncture needle inserted?
2. To which category of bones according to the modern classification does it belong: short (spongy/cancellous), long (tubular), flat, pneumatic (air-filled)?

3. What type of joints do the cartilaginous ends of the true ribs form with this bone? (Specify the number of true ribs.)
4. Which organ and large vessels passing behind this bone at the level of attachment of the cartilages of the third ribs must the doctor avoid damaging: thymus, trachea, ascending aorta, aortic arch, superior vena cava, heart, pulmonary trunk? (Choose three correct answers.)
5. Which bones, containing a significant amount of red bone marrow, can be used to obtain it: calcaneus, scapula, iliac crest, or diaphysis of the tibia? (Choose two correct answers.)

AI-1 GPC-10.1

Case. On a lateral radiograph of the cervical spine of a 50-year-old patient, the doctor notes the presence of radiolucent areas of equal size between the bodies of the cervical vertebrae (from the second to the sixth). Between the bodies of the sixth and seventh cervical vertebrae, no radiolucency is observed, and the intervertebral foramen is narrowed, indicating pathology. Furthermore, the cervical spine does not form a curve in the sagittal plane.
1. What anatomical structure corresponds to the radiological "radiolucency" between the bodies of the second through sixth cervical vertebrae? (Name its parts and functional purpose during walking.)
2. To which type of joint does this structure belong: synchondrosis, synostosis, symphysis, or synovial joint? (Consider the patient's age in your answer.)
3. Ossification of which ligament led to the narrowing of the intervertebral foramen?
4. Which anatomical structure can be compressed in the narrowed intervertebral foramen: the seventh cervical spinal nerve, vertebral artery, vertebral vein, deep cervical vein?
5. Is the absence of a curve in the cervical spine in the sagittal plane normal? (Justify your answer)

Assessment criteria, grading scale for the *cases*

Grade		**Description**
«Excellent»	5	Explanation of the solution to the situational task is detailed, sequential, competent, with theoretical justifications, necessary schematic illustrations and clear demonstrations, with correct and fluent command of terminology; answers to additional questions are accurate and clear
«Good»	4	The explanation of the solution to the situational task is detailed but insufficiently logical, with isolated errors in details, some difficulties in theoretical justification, schematic illustrations, and clear demonstrations; answers to additional questions are correct but not sufficiently clear
«Satisfactory»	3	The explanation of the solution to the situational task is insufficiently complete, inconsistent, contains errors, has weak theoretical justification, significant difficulties and errors in schematic illustrations and clear demonstrations; answers to additional questions are not sufficiently clear and contain errors in details
«Unsatisfactory»	2	The explanation of the solution to the situational task is incomplete, inconsistent, contains gross errors, lacks theoretical justification, shows an inability to create schematic illustrations and clear demonstrations or contains numerous errors; answers to additional questions are incorrect or absent

3. Procedure for conducting current assessment.

Current assessment of progress in the discipline is conducted in the form of quizzes, test assignments, and course work defense.

4. Examples of assessment methods and grading criteria for conducting interim assessment.

4.1. Approximate list of control questions for preparing for the theoretical part of the exam:

AI-3 GPC-5.3

1. Human anatomy as a fundamental science. The place of human anatomy among biomedical disciplines. The importance of anatomical knowledge for clinical and preventive medicine.
2. Ribs and Sternum: Structure, Classification of Ribs. Articulations of Ribs with the Vertebral Column and Sternum. The Thoracic Cage as a Whole. Sexual and Constitutional Features of the Thoracic Cage.
3. Masticatory muscles, their development, classification, functions, blood supply, venous and lymphatic drainage, innervation. Fasciae of the masticatory muscles.
4. The tongue, its structure, functions, blood supply, venous and lymphatic drainage, and innervation.
5. The nasal cavity, its structure, nasal meatuses, communications (openings/connections), blood supply, venous and lymphatic drainage, and innervation.
6. Sources and patterns of development of the male reproductive system organs. Possible structural variations, anomalies, and developmental malformations.

AI-1 GPC-10.1

7. The pituitary gland, its place in the endocrine system, topography, structure, and function. Features of blood supply. The pineal gland.
8. Heart chambers and valves, their anatomy, relief of the internal surface; structure of the chambers along the blood flow. Projection of the valves onto the anterior thoracic wall. Mechanism of blood flow regulation in the heart. Organization of blood circulation in humans
9. Superficial and deep veins of the upper limb, their topography, anastomoses, and areas of blood collection.
10. Brainstem: medulla oblongata, its external and internal structure. Topography of nuclei and conducting pathways in the medulla oblongata.

Assessment criteria, grading scale for *control questions*

Grade		**Description**
«Excellent»	5	Knows all the educational material, has an excellent understanding and has firmly mastered it. Gives correct, conscious, and confident answers to questions (within the curriculum). In oral responses, uses a literate language and makes no mistakes
«Good»	4	Knows all the required educational material, understands it well and has firmly mastered it. Answers questions (within the curriculum) without difficulty. In oral responses, uses a literary language and does not make gross errors
«Satisfactory»	3	Knows the basic educational material. Has difficulty answering questions (within the curriculum). In oral responses, makes errors in presenting the material and in

Grade		Description
		speech construction
«Unsatisfactory»	2	Does not know most of the educational material, typically answers only leading questions from the instructor, and lacks confidence. Makes frequent and gross errors in oral responses

4.2. Demonstration of a practical skill

Sample questions for the practical part of the exam, requiring the ability to demonstrate and name structures in Latin (and Greek) language.

AI-3 GPC-5.3

I. OSTEOSYNDESMOLOGY. SKULL

1. Vertebral body
2. Vertebral arch
3. Vertebral foramen
4. Spinous process of the vertebra
5. Transverse process of the vertebra
6. Articular processes of the vertebra (upper, lower)
7. Atlas
8. Anterior arch of the atlas
9. Posterior arch of the atlas
10. Groove of the vertebral artery on the atlas
11. Axial vertebra tooth
12. Transverse hole

II. MYOLOGY

1. Geniohyoid muscle
2. Sternohyoid muscle
3. Sternothyroid muscle
4. Thyrohyoid muscle
5. Omohyoid muscle
6. Anterior scalene muscle
7. Middle scalene muscle
8. Posterior scalene muscle
9. Longus capitis muscle
10. Longus colli muscle
11. Rectus capitis anterior muscle
12. Lateral rectus capitis muscle
13. Rectus capitis posterior major muscle
14. Rectus capitis posterior minor
15. Superior oblique muscle of the head
16. Inferior oblique muscle of the head

III. SPLANCHNOLOGY

1. Jejunum
2. Ileum
3. Colon
4. Mucous membrane of the colon
5. Vestibular fold
6. Vestibular fissure
7. Ventricle of the larynx
8. Voice apparatus

9. Large (upper, middle, lower) renal calyces
10. Minor renal calyces
11. Abdominal part of the ureter
12. Pelvic part of the ureter

IV. ANGIOLOGY

1. Sternal-costal surface (anterior surface) of the heart
2. Diaphragmatic surface (inferior surface) of the heart
3. Right pulmonary surface of the heart
4. Left pulmonary surface of the heart
5. Right edge of the heart
6. Top of the heart
7. Obturator artery
8. Superior gluteal artery
9. Inferior gluteal artery
10. umbilical artery
11. Uterine artery

V. NEUROLOGY AND THE SENSE ORGANS

1. Medulla oblongata (bulbus)
2. Olive (medulla oblongata)
3. Posterior lateral sulcus (medulla oblongata)
4. Inferior cerebellar peduncle
5. Tubercle of the cuneate nucleus (medulla oblongata)
6. Dorsal nerve of the scapula
7. Long thoracic nerve
8. Subclavian nerve
9. Suprascapular nerve
10. Subscapular nerves
11. Pupil
12. Retina
13. Optic disc
14. Optic nerve
15. Anterior pole of the lens

Assessment criteria, grading scale for evaluating *practical skills*

Grade		**Description**
«Excellent»	5	Knows all the educational material, has an excellent understanding and has firmly mastered it. Gives correct, conscious, and confident answers to questions (within the curriculum). In oral responses, uses a literate language and makes no mistakes
«Good»	4	Knows all the required educational material, understands it well and has firmly mastered it. Answers questions (within the curriculum) without difficulty. In oral responses, uses a literary language and does not make gross errors
«Satisfactory»	3	Knows the basic educational material. Has difficulty answering questions (within the curriculum). In oral responses, makes errors in presenting the material and in speech construction
«Unsatisfactory»	2	Does not know most of the educational material, typically answers only leading questions from the instructor, and

		lacks confidence. Makes frequent and gross errors in oral responses

4.3. Examples of Cases for the theoretical part of the exam:

AI-3 GPC-5.3

Case 1. A young woman consulted a plastic surgeon to increase the size of her lips by injecting Botox. Into which facial muscle was the drug injected: the orbicularis oris muscle; the levator labii superioris muscle, or the depressor labii inferioris muscle? What individual variations in lip size are known as normal?

Answer: Botox was injected into the orbicularis oris muscle, specifically its labial part. The orbicularis oris muscle consists of two parts: the labial and the facial. The labial part forms the lips. The facial part of the muscle intermingles with the muscles that attach to the bones (such as the levator labii superioris and the depressor labii inferioris). Based on size, lips are classified into four variants: thin, medium, thick, and "full" (voluptuous).

Case 2. A four-year-old girl has a retropharyngeal abscess – an inflammation of the cellular tissue and lymph nodes in the retropharyngeal space. Where is the retropharyngeal space located: anterior, posterior, or lateral to the pharynx? Which fasciae bound it?

Answer: The retropharyngeal space is located posterior to the pharynx. It is bounded by the prevertebral layer of the cervical fascia (posteriorly) and the fascia of the pharyngeal musculature (anteriorly).

AI2 GPC-10.2

Case 3. The patient has tongue cancer. His organ was removed. What functional disorders can the patient expect due to the loss of the tongue?

Answer: The tongue is an organ of the digestive system (involved in food intake, sucking, chewing, salivation, and swallowing), an organ of taste, and speech formation. The lingual tonsil is part of the Pirogov-Waldeyer lymphatic-epithelial ring. With the loss of the tongue, the patient will be unable to chew, swallow, speak, or perceive taste. Additionally, the body's immune defenses will be lowered.

Case 4. During esophageal endoscopy, longitudinal folds of the mucous membrane were detected in the patient. However, in the lower thoracic section of the organ, the doctor noted the presence of transverse folds. Which folds are characteristic of the esophageal mucous membrane in its normal state: longitudinal or transverse? What could be the cause of the appearance of transverse folds?

Answer: Normally, the mucous membrane of the esophagus has longitudinal folds. Transverse folds could have formed due to the contraction of the circular layer of the muscular tunic, which indicates increased motor function of the organ.

Case 5. A doctor analyzes three radiopaque images of the stomach of mature patients with different body types. On them, the stomach has different shapes: like a stocking, a hook, and a horn. At the same time, the organ's length and width indicators are different: for one patient, 15 cm and 12 cm respectively; for the second – 30 cm and 10 cm; for the third – 23 cm and 15 cm. What correspondence did the doctor establish between the shape of the stomach and its morphometric indicators?

Answer: A stomach shaped like a stocking has a length of 30 cm and a width of 10 cm; a stomach shaped like a horn has a length of 15 cm and a width of 12 cm. The length of a hook-shaped stomach is 23 cm, and its width is 15 cm.

Evaluation criteria, grading scale for the *Cases*

Grade		**Description**
«Excellent»	5	The explanation of the solution to the situational task is detailed, sequential, competent, with theoretical justifications, necessary schematic images and visual demonstrations, with correct and confident command of terminology; the answers to additional questions are accurate and clear
«Good»	4	The explanation of the solution to the situational task is detailed but insufficiently logical, with isolated errors in details, some difficulties in theoretical justification, schematic images, and visual demonstrations; the answers to additional questions are correct but insufficiently clear
«Satisfactory»	3	The explanation of the solution to the situational task is insufficiently complete, inconsistent, contains errors, has weak theoretical justification, includes significant difficulties and mistakes in schematic images and visual demonstrations; the answers to additional questions are insufficiently clear and contain errors in details
«Unsatisfactory»	2	The explanation of the solution to the situational task is incomplete, inconsistent, contains serious errors, lacks theoretical justification, demonstrates an inability to create schematic images and visual demonstrations or includes a large number of mistakes; answers to additional questions are incorrect or absent

Evaluation criteria, final assessment scale

Grade		**Description**
«Excellent»	5	The student answered the theoretical question(s) correctly. Demonstrated excellent knowledge within the scope of the educational material. Correctly completed the practical task(s). Demonstrated excellent skills and proficiency in applying acquired knowledge and skills to solve problems within the scope of the educational material. Answered all additional questions
«Good»	4	The student answered the theoretical question(s) with minor inaccuracies. Demonstrated good knowledge within the scope of the educational material. Completed the practical task(s) with minor inaccuracies. Demonstrated good skills and proficiency in applying acquired knowledge and skills to solve problems within the scope of the educational material. Answered most of the additional questions
«Satisfactory»	3	The student answered the theoretical question(s) with significant inaccuracies. Demonstrated satisfactory knowledge within the scope of the educational material. Completed the practical task(s) with significant inaccuracies. Demonstrated satisfactory skills and proficiency in applying acquired knowledge and skills to solve problems within the scope of the educational material. Made many inaccuracies when answering additional questions
«Unsatisfactory»	2	The student, when answering the theoretical question(s) and

Grade		Description
		completing the practical task(s), demonstrated an insufficient level of knowledge and skills in solving problems within the scope of the educational material. Many incorrect answers were given when responding to additional questions

5. Procedure for conducting Interim assessment

Interim assessment in the discipline is conducted in the form of an exam. The exam includes: demonstration of a practical skill, answering control questions, and solving a situational task.