

Ministry of Science and Higher Education of the Russian Federation
Federal State-Funded Educational Institution of Higher Education
ULYANOVSK STATE UNIVERSITY
Faculty of Medicine
Department of General and Clinical Morphology

**METHODOLOGICAL RECOMMENDATIONS
FOR SELF- STUDY WORK OF STUDENTS
ON DISCIPLINE «ANATOMY»**

Specialty - 31.05.01 «General medicine»
Form of study: intramural

Developers:

J.F. ZERKALOVA, M.V. VOROTNIKOVA

Ulyanovsk, 2023

UDC
BBK
To

Recommended by the Academic Council of the Institute of Medicine, Ecology and Physical Culture of Ulyanovsk State University
Protocol No. 9/250 of May 17, 2023

The developer – PhDs in Medicine. associate professors Zerkalova J.F., Vorotnikova M.V.

The reviewer – assistant professor Mironcheva O. A.

Study guide on a subject matter “Anatomy”.-Ulyanovsk, UIGU, 2023.

The study guide is prepared according to requirements of the working program and contains methodical indications for the main sections of a subject matter “Anatomy” according to the existing curriculum. The study guide is intended for the students of medical faculty studying on specialties 31.05.01 “General medicine”

CONTENTS

Introduction	3
Results (competences) are assumed	4
Topics of self- study work	4
The list of recommended literature.....	16

INTRODUCTION

Short characteristic of a subject matter “Anatomy”.

1. OBJECTIVES AND AIM OF MASTERING THE DISCIPLINE

Objectives of mastering the discipline - is the acquisition by students of knowledge about the form and structure of the human body, its constituent organs and systems.

The process of mastering the discipline "Anatomy" is aimed at the formation of general professional competence GPC-5.

Aim of mastering the discipline:

- to form students' knowledge about the shape of the human body, organs and systems;
- the study of anatomy as a fundamental biomedical discipline on the development and structure of organs and systems, the study of the development, structure of sex, age and individual variability of organs and systems as a whole and their individual parts.

2. PLACE OF DISCIPLINE IN THE STRUCTURE OF THE BASIC PROFESSIONAL EDUCATIONAL PROGRAM: the discipline B1.O.03

Discipline "Anatomy" refers to the basic part of the BPEP HE specialty 31.05.01 – «General medicine». Discipline "Anatomy" for English-speaking students is taught and studied in English.

Natural science and biomedical disciplines. Students must master the basics of terminology, correctly apply medical terms in both Latin and Russian, as well as master the knowledge and skills in the anatomy and topography of organs and tissues of the human nervous system.

Mastering the discipline is based on the knowledge, skills and abilities formed by previous discipline “Biology”.

Studying the discipline "Anatomy" allows students to obtain the necessary knowledge and skills in the development of subsequent disciplines: " Embryonic development of body tissues ", "Histology, embryology, cytology", "Biochemistry", "Neuroanatomy", "Normal physiology", "Microbiology, Virology", "Physiology of visceral systems", "Pathological anatomy", "Pathophysiology, clinical pathophysiology", "Obstetrics and gynecology", "Forensic medicine".

**THE LIST OF PLANNED LEARNING OUTCOMES ON DISCIPLINE,
CORRELATED WITH THE PLANNED RESULTS OF MASTERING
THE BASIC PROFESSIONAL EDUCATIONAL PROGRAM**

The study of the subject "Anatomy" within the completion of the educational program is directed towards the formation of general professional competence in students:

Code and name of the implemented competence	List of planned learning outcomes for discipline (module), correlated with indicators of achievement of the competencies
GPC-5 Able to assess morphofunctional, physiological conditions and pathological processes in the human body to solve professional problems	IA-1 GPC5 The student must know: <ul style="list-style-type: none"> • structure, topography and development of cells, tissues, organs and systems of the body in interaction with their function in the norm and pathology, features of the organismic and population levels of organization of life; • anatomical and physiological, age-sexual and individual features of the structure and development of a healthy and sick organism; • the structure of the human body in relation to the function and topography of systems and organs, the functional systems of the human body, their regulation and self-regulation when exposed to the external environment in the norm and pathology.
	IA-2 GPC5 The student must be able to: <ul style="list-style-type: none"> • use educational, scientific, popular science literature, the Internet for professional activities; • palpate the main bony landmarks on a person, outline the topographic contours of organs and the main vascular and nerve trunks; • explain the nature of deviations in the course of development that can lead to the formation of variants of anomalies and defects.
	IA-3 GPC5 The student must possess: <ul style="list-style-type: none"> • the methods for assessing the anatomical, physiological and pathological conditions of the patient; • the methods of physical examination of the patient.

TOPICS OF SELF- STUDY WORK

Section 1. The history of anatomy. Ontogenesis

TOPIC 1

Theme: Introduction to human anatomy.

Purpose of a lesson: to gain knowledge about the history of anatomy, anatomical nomenclature.

Form of control: questions of exam

Student should know:

1. Human anatomy as a fundamental medicine science, its methods and significance
2. Organism as a holistic system.
3. Anatomical nomenclature.

- 4.The development of anatomical knowledge.
- 5.The works of Aristotle, Herophilus, Galen and Avicenna in the development of anatomy.
Anatomy in the Renaissance.

TOPIC 2

Theme: Ontogenesis of human.

Purpose of a lesson: to gain knowledge about the ontogenesis of human.

Form of control: questions of exam

Student should know:

1. The initial stages of ontogenesis.
2. Characteristics of early stages.

TOPIC 3

Theme: Introduction to human embryology.

Purpose of a lesson: to gain knowledge about phase of prenatal and postnatal development

Form of control: questions of exam

Student should know:

1. Phase of prenatal development.
2. Histogenesis and organogenesis of the main system.
3. Critical periods of fetal development.
4. Characteristics of retention organs.
5. Periods of postnatal development.

Section 2. Osteology

TOPIC 4

Theme: Bones of trunk.

Purpose of a lesson: gain knowledge about the bones of trunk.

Form of control: questions of exam

Student should know:

1. The axis and atlas.
2. Cervical vertebrae, thoracic vertebrae, lumbar vertebrae, sacral vertebrae, coccygeal vertebrae.
3. The ribs and breast bone.

TOPIC 5

Theme: Bones of skull. Cranial Skeleton.

Purpose of a lesson: gain knowledge about the bones of the skull.

Form of control: questions of exam

Student should know:

1. The bones of cranial skull : frontal bone, cuneiform bone, occipital bone, parietal bone, ethmoid bone, temporal bone.

TOPIC 6

Theme: Bones of skull. Facial Skeleton.

Purpose of a lesson: gain knowledge about the bones of the skull.

Form of control: questions of exam

Student should know:

1. The bones of facial skull: upper and lower jaw, vomer, inferior nasal concha, palatine bone, nasal bone, lacrimal bone, zygomatic bone, hyoid bone.

TOPIC 7

Theme: Development of the bones of skull.

Purpose of a lesson: gain knowledge about the development of bones of the skull.

Form of control: questions of exam

Student should know:

1. Features of structure of the skull of newborn.
2. Dimorphism of the skull.
3. Abnormalities of development of bones of the skull. X-ray anatomy of skull bones.

Section 3. Arthrology

TOPIC 8

Theme: General arthrosyndesmology

Purpose of a lesson: gain knowledge about the phylogenesis and ontogenesis of the skeleton bones, the function of joints. The development of the synovial joints.

Form of control: questions of exam

Student should know:

1. Types of continuous joint. Features of structure of joints.

2. The signification about complex and combined joints.
3. Formation of spinal curvature to ontogenesis.
4. Abnormalities of development of backbone and thorax. X-ray anatomy of joints of trunk and limbs .

TOPIC 9

Theme: The bones and joints of postnatal ontogenesis

Purpose of a lesson: to gain knowledge about the postnatal ontogenesis of bones and joints.

Form of control: questions of exam

Student should know:

1. Features of development of bones and joints of postnatal ontogenesis.
2. Three stages of the development: connective-tissue, cartilaginous and osseous.

TOPIC 10

Theme: Introduction to X-ray anatomy

Purpose of a lesson: to gain knowledge about the X-ray anatomy

Form of control: questions of exam

Student should know:

1. Features of x-ray anatomy of organs and system of human organism.
2. The method of computer tomography and nuclear magnetic resonance

TOPIC 11

Theme: Join of bones of the trunk and the skull

Form of control: questions of exam

Purpose of a lesson: to study the structure of the joint of bones of the trunk and the skull

Student should know:

1. Continuous join of bones of the trunk and the skull.
2. Discontinuous join of bones of the trunk and the skull.
3. Vertebral column.
4. General anatomy of thorax

TOPIC 12

Theme: Joins of bones of the upper limbs

Form of control: questions of exam

Purpose of a lesson: to study the anatomical structure of continuous and discontinuous joins of bones of the upper limb

Student should know:

1. Continuous joins of bones of the upper limb
2. Discontinuous joins of bones of the upper limb

TOPIC 13

Theme: Joins of bones of the lower limbs

Form of control: questions of exam

Purpose of a lesson: to study the anatomical structure of joins of the lower limbs

Student should know:

1. Continuous joins of bones of the lower limb
2. Discontinuous joins of bones of the lower limb

Section 4. Miology

TOPIC 14

Theme: The functional anatomy of the facial muscles

Form of control: questions of exam

Purpose of a lesson: to study the anatomical structure and functional anatomy of the facial muscles

Student should know:

1. The facial muscles, their classification and general qualification
2. Analysis of human facial expressions.

TOPIC 15

Theme: The functional anatomy of the masticatory apparatus

Form of control: questions of exam

Purpose of a lesson: to study the anatomical structure and functional anatomy of the masticatory apparatus

The student should know:

1. The masseter muscles, their classification and general qualification .
2. The morphology of the masticatory apparatus.

TOPIC 16

Theme: The functional anatomy of the trunk muscles

Form of control: questions of exam

Purpose of a lesson: to study the anatomical structure and functional anatomy of the muscles of the trunk

The student should know:

1. Muscles of the trunk, their classification, structure and functions.
2. The Diaphragm, its development, topography and structure.
3. Muscles of the back : superficial and deep layers.
4. Abdominal press, its components.
5. The rectus sheath. The White Line.
6. The Umbilical ring. The Inguinal canal.

TOPIC 17

Theme: Anatomy and bio-mechanics of the joints and muscles of the upper limb

Form of control: questions of exam

Purpose of a lesson: to study the anatomy and bio-mechanics of the joints and muscles of the upper limb

The student should know:

1. Muscles and fasciae of the upper limb, their topography, canals, furrows and fosses.
2. Topography of axillary cavity.
3. Movements of the upper limb.

TOPIC 18

Theme: General questions about medicine anthropology

Form of control: questions of exam

Purpose of a lesson: to study the principles and ways of medicine anthropology

Student should know:

1. Morphology of human as a section of human science, its principles and ways.
2. Anthropometry as the complex of morphological and functional features.

TOPIC 19

Theme: Classification of muscles

Form of control: questions of exam

Purpose of a lesson: to study the classification of muscles

The student should know:

1. Classification of muscles.
2. Auxillary apparatus of muscles

TOPIC 20

Theme: The bone-fascias and intermuscular space of calvarium

Form of control: questions of exam

Purpose of a lesson: to study the anatomy of bone-fascias and intermuscular space of calvarium

The student should know:

1. The bone-fascias and intermuscular space of calvarium.
2. Temporal area and lateral area of face, its topography, walls, contains and signification.

Section 5. Viscerology

TOPIC 21

Theme: Embryogenesis of the cardiovascular system

Form of control: questions of exam

Purpose of a lesson: to study the studies of embryogenesis of the cardiovascular system

The student should know:

1. Cardiovascular system, its general anatomy, development and functions.
2. Development of the heart.
3. X-ray anatomy of the heart and large vessels

TOPIC 22

Theme: Particular anatomy of the lymphatic system.

Form of control: questions of exam

Purpose of a lesson: to study the particular anatomy of the lymphatic system.

The student should know:

1. Structure of the lymphatic system.
2. Larger lymphatic vessels, trunks, and ducts.
3. The structure and function of the primary and secondary lymphatic organs.

TOPIC 23

Theme: The organs of the oral cavity. Feature of structure of newborn

Form of control: questions of exam

Purpose of a lesson: to study the dentoalveolar apparatus of children and adults

The student should know:

1. Dentoalveolar apparatus of children and adults.
2. Feature of structure of upper and lower row of teeth.
3. Time of cutting out of first and permanent teeth.

TOPIC 24

Theme: Normal feature and pathology in X-ray anatomy of teeth and jaw in the different view

Form of control: questions of exam

Purpose of a lesson: to study the normal feature and pathology in X-ray anatomy of teeth and jaw

The student should know:

1. Features of X-ray anatomy of teeth.
2. Features of X-ray anatomy of jaws in the different view.

TOPIC 25

Theme: Development, abnormalities of development and X-ray anatomy of the organs of digestive system

Form of control: questions of exam

Purpose of a lesson: to study development, abnormalities of development and X-ray anatomy of the organs of digestive system

The student should know:

1. Development and features of structure of organs of digestive system of newborns.
2. Development and features of structure of organs of digestive system of adults.
3. Abnormalities of development of digestive system

TOPIC 26

Theme: Upper airways. Features of structure and development of adult and newborn

Form of control: questions of exam

Purpose of a lesson: to study the anatomy, development, functional signification of sinuses

The student should know:

1. Paranasal sinuses.
2. Antrum of Highmore, its anatomy, functional signification, binding with dentoalveolar apparatus.
3. Olfactory region of nose

TOPIC 27

Theme: Development, abnormalities of development and X-ray anatomy of the organs of urinary system

Form of control: questions of exam

Purpose of a lesson: to study the development, abnormalities of development and X-ray anatomy of the organs of urinary system

The student should know:

1. Features of embryogenesis of urinary apparatus.
2. Abnormities of development of urinary apparatus.
3. Features of x-ray anatomy of kidneys, ureters and urinary bladder.

TOPIC 28

Theme: Features of structure and development of genitals.

Form of control: questions of exam

Purpose of a lesson: to study the features of structure and development of genitals

The student should know:

1. Features of embryogenesis of urinary apparatus.
2. Abnormities of development of male genitals.
3. Abnormities of development of female genitals.

TOPIC 29

Theme: Development of the cardiovascular system. Features of structure of newborns and children.

Form of control: questions of exam

Purpose of a lesson: to study the development of the cardiovascular system

The student should know:

1. Features of structure of newborns and children.
2. Vessels of various size, their features of structure.
3. Collateral circulation.
4. X-ray anatomy of the heart and large vessels.
5. Anastomosis of trunk and limbs vessels, their clinical signification

TOPIC 30

Theme: Blood supply of organs of head and neck

Form of control: questions of exam

Purpose of a lesson: to study blood supply of organs of head and neck

The student should know:

1. Blood supply of brain.
2. Blood supply of organ of the vision.
3. Blood supply of tongue.

TOPIC 31

Theme: General anatomy of arteries structure. Collateral circulation.

Form of control: questions of exam

Purpose of a lesson: to study the general anatomy of arteries structure.

The student should know:

1. Cardiovascular system, its general anatomy, development and functions.
2. Patterns of location and branches of the main extra-organic and intra-organic arteries.
3. Arterial system. Microcirculation. Collateral circulation.
4. Structure of the microcirculation in organs and tissues. Definition of collateral circulation.

Section 8. Peripheral nervous system

TOPIC 32

Theme: Functional anatomy of autonomic nervous system.

Form of control: questions of exam

Purpose of a lesson: to study the general anatomy of autonomic nervous system.

The student should know:

1. Structure and functions of autonomic nervous system.
2. Sympathetic and parasympathetic parts.
3. Sympathetic trunk, its topography and nerves.
4. Autonomic nervous plexus of the head, neck, thorax, abdomen and pelvis.
5. Parasympathetic nervous centers of brain and spinal cord.
6. Vagus and splanchnic nerves of the peripheral nervous system

TOPIC 33

Theme: Autonomic ganglions.

Form of control: questions of exam

Purpose of a lesson: to study the general anatomy of autonomic nervous system.

The student should know:

1. Structure and functions of pterygopalatine ganglion. Its bidding with branches of trigeminal nerve.
2. Structure and functions of otic ganglion. Its bidding with branches of trigeminal nerve.
3. Structure and functions of sublingual ganglion. Its bidding with branches of trigeminal nerve.
4. Structure and functions of submandibular ganglion. Its bidding with branches of trigeminal nerve.

Section 6. Angiology

TOPIC 34

Theme: The head, the neck, the chest and the upper limb, their lymphatic vessels and nodes. The lymphatic nodes of mammary gland.

Form of control: questions of exam

Purpose of a lesson: to study the general anatomy of lymphatic vessels and nodes of the head, the neck, the chest and the upper limb.

The student should know:

1. Main lymphatic vessels and nodes of the head, neck, organs of thoracic cavity and upper limbs.
2. Parietal and visceral lymphatic nodes of organs of thorax.
3. Superficial and deep lymphatic vessels and nodes of the head and neck.
4. Superficial and deep lymphatic vessels and nodes of upper limb.
5. The ways of outflow of lymph from mammary gland

TOPIC 35

Theme: The lymphatic vessels and nodes of the organs of pelvis and abdomen and lower limb.

Form of control: questions of exam

Purpose of a lesson: to study the general anatomy of lymphatic vessels and nodes of the organs of pelvis and abdomen and lower limb.

The student should know:

1. Main lymphatic vessels and nodes of lower limbs, organs of pelvis and abdomen.
2. Superficial and deep lymphatic vessels of lower limb.
3. Popliteal and inguinal lymph nodes.
4. Parietal and visceral lymph nodes of pelvis and abdominal cavity.
5. Lymphatic vessels and regional nodes of the stomach, small and large intestines, kidneys, liver, uterus and urinary bladder.

TOPIC 36

Theme: Intercostal nerves.

Form of control: questions of exam

Purpose of a lesson: to study the general anatomy of intercostal nerves.

The student should know:

1. Intercostal nerves, their topography, branches and areas of innervations.
2. Nerves and blood vessels of the walls of thorax, their topography anatomical relations.

TOPIC 37

Theme: Nerves and blood vessels of upper limb, their topography relations. Innervation of muscles and skin of upper limb.

Form of control: questions of exam

Purpose of a lesson: to study the general anatomy of nerves and blood vessels of upper limb, their topography relations.

The student should know:

1. Innervation of the separate group of muscles and areas of the upper limb.
2. Muscles of girdle, shoulder, forearm and hand.
3. Nerves of upper limb.
4. Topography and anatomical relation of nerves and blood vessels of the upper limb.
5. Muscles and blood vessels of upper limb.

TOPIC 38

Theme: Innervation, blood supply and outflow of lymph of the organs and walls of pelvis.

Form of control: questions of exam

Purpose of a lesson: to study the innervation, blood supply and outflow of lymph of the organs and walls of pelvis.

The student should know:

1. Innervations, blood supply and outflow of lymph of the organs and walls of pelvis.
2. The ways of outflow of lymph by organs and walls of pelvis.
3. Muscles of pelvis.
4. External and internal artery, its branches.
5. External and internal veins, its branches and flows.

TOPIC 39

Theme: Nerves and blood vessels of lower limb, their topography relations.

Form of control: questions of exam

Purpose of a lesson: to study the nerves and blood vessels of lower limb, their topography relations.

The student should know:

1. Innervations, blood supply and outflow of lymph from different group of muscles and areas of the lower limb.
2. Muscles of lower limb, its nerves and branches.
3. Topography and anatomical relation of nervous and blood vessels of the lower limb.

The list of recommended literature

Main literature:

- 1.1. Kolesnikov, L. L. Textbook of Human Anatomy. In 3 vol. Vol. 1. Locomotor apparatus / L. L. Kolesnikov, D. B. Nikitiuk, S. V. Klochkova, I. G. Stelnikova. - Москва : GEOTAR-Media, 2020. - 288 p. - 288 с. - ISBN 978-5-9704-5763-4. - Текст : электронный // ЭБС "Консультант студента" : [сайт]. - URL : <https://www.studentlibrary.ru/book/ISBN9785970457634.html>
- 1.2. Kolesnikov, L. L. Textbook of Human Anatomy. In 3 vol. Vol. 2. Splanchnology and cardiovascular system / L. L. Kolesnikov, D. B. Nikitiuk, S. V. Klochkova, I. G. Stelnikova. - Москва : GEOTAR-Media, 2020. - 320 p. - 320 с. - ISBN 978-5-9704-5764-1. - Текст : электронный // ЭБС "Консультант студента" : [сайт]. - URL : <https://www.studentlibrary.ru/book/ISBN9785970457641.html>
- 1.3. Kolesnikov, L. L. Textbook of Human Anatomy. In 3 vol. Vol. 3. Nervous system. Esthesiology / L. L. Kolesnikov, D. B. Nikitiuk, S. V. Klochkova, I. G. Stelnikova. - Москва : GEOTAR-Media, 2020. - 216 p. - 216 с. - ISBN 978-5-9704-5811-2. - Текст : электронный // ЭБС "Консультант студента" : [сайт]. - URL : <https://www.studentlibrary.ru/book/ISBN9785970458112.html>
2. Гаджиева Ф. Г. Anatomy of the inner organs. Arteries. Veins. Lymphatics = Анатомия внутренних органов. Артерии. Вены. Лимфа : пособие для студентов учреждений высшего образования, обучающихся по специальности 1-79 01 01 «Лечебное дело» [на англ. яз.] : the manual for students of the specialty 1 79 01 01 "General Medicine" of the Faculty for Foreign students with English language of study / Ф. Г. Гаджиева, С. А. Сидорович. - Гродно : ГрГМУ, 2019. - 264 с. - ISBN 9789855950937. - Текст : электронный // ЭБС "Букап" : [сайт]. - URL : <https://www.books-up.ru/ru/book/anatomy-of-the-inner-organs-arteries-veins-lymphatics-12066416/>

Additional literature:

1. Human Eye and Ear Anatomy in Diagrams and Charts : Instructional recommendations on human anatomy / Zerkalova Yu. F. , M. V. Vorotnikova, R. M. Khairullin [et al.]; Ulyanovsk State University, Insitute of Medicine, Ecology and Physical culture. - Ulyanovsk : ULSU, 2019. - Текст на англ. яз.; Загл. с экрана. - Электрон. текстовые дан. (1 файл : 692 КБ). - Текст : электронный. <http://lib.ulsu.ru/MegaPro/Download/MObject/1458>
2. Methodological recommendations for students on discipline «Anatomy» (practical (laboratory) lessons) Specialty - 31.05.01 «General medicine» Form of study: intramural / J. F. Zerkalova, M. V. Vorotnikova; Ulyanovsk State University, Insitute of Medicine, Ecology and Physical culture. - Ulyanovsk : ULSU, 2019. - Загл. с экрана; На англ. яз.; Неопубликованный ресурс. - Электрон. текстовые дан. (1 файл : 307 Кб). - Текст : электронный. <http://lib.ulsu.ru/MegaPro/Download/MObject/4478>

3. Волчкевич Д. А. Human anatomy in tables, diagrams and figures. In three parts. Volume 1. Bones, connections and muscles = Анатомия человека в таблицах, схемах и рисунках. В 3 ч. Ч. 1 / Д. А. Волчкевич, А. В. Бобрик. - Гродно : ГрГМУ, 2018. - 184 с. - ISBN 9789855589991. - Текст : электронный // ЭБС "Букап" : [сайт]. - URL : <https://www.books-up.ru/ru/book/human-anatomy-in-tables-diagrams-and-figures-in-three-parts-volume-1-bones-connections-and-muscles-12066693/>
4. Textbook of human anatomy = Анатомия человека : for medical students : учебное пособие для студентов медицинских вузов (на англ. яз.) : in 2 vol. Vol. 1 / M. R. Sapin, L. L. Kolesnikov, D. B. Nikitjuk ; ed. by M. R. Sapin. - 2nd ed. - Moscow : New Wave, 2020. - 416 с
5. Textbook of human anatomy = Анатомия человека : for medical students : учебное пособие для студентов медицинских вузов (на англ. яз.) : in 2 vol. Vol. 2 / M. R. Sapin, L. L. Kolesnikov, D. B. Nikitjuk ; ed. by M. R. Sapin. - 2nd ed. - Moscow : New Wave, 2020. - 480 с