

**MEDICAL UNIVERSITY OF PLOVDIV
MEDICAL FACULTY**

COURSE SYLLABUS

ANATOMY AND HISTOLOGY

ADOPTED BY THE DEPARTMENT COUNCIL ON 1.06.2020.

APPROVED BY THE FACULTY COUNCIL - PROTOCOL № 5, 08.07.2020

HUMAN ANATOMY

CURRICULUM

| Discipline | Semester Exam | Course Hours | | | | Hours per wears per semesters | | | |
|-----------------------|---------------|--------------|----------|------------|---------|-------------------------------|-----|-----|-----|
| | | Total | Lectures | Practicals | Credits | I | II | III | IV |
| Anatomy and Histology | II, IV | 315 | 90 | 225 | 27,6 | 1/3 | 2/4 | 2/4 | 1/4 |

NAME OF DISCIPLINE

Anatomy and Histology

DISCIPLINE TYPE ACCORDING TO UNIFORM STATE REQUIREMENTS

Compulsory

LEVEL OF QUALIFICATION

Master /M/

TRAINING METHODS

Lectures, lab practicals, group working, individual work, self-study

DURATION OF TRAINING

Four semesters

TUITION HOURS:

90 hrs. lectures, 225 hrs. practicals

TECHNICAL EQUIPMENT USED IN THE TRAINING:

Light microscopes, native preparations, models, smart boards, interactive resources (A.D.A.M. interactive anatomy, Sectra 3D table for virtual dissection supplemental websites), Office 365 Portal MU-Plovdiv.

CONTROL AND ASSESSMENT:

Current assessment - quizzes, labs, dissections, presentations and lab practical.
Final assessment.

FINAL ASSESSMENT:

In four stages: 1. Practical exam, 2. MCQs exam, 3. Written exam (essay), 4. Oral exam.

GRADING

The grade will come from midterm exams (i.e., colloquiums) and final exam.

The grades will be weighted as follows:

Midterm average 30%
Final exam 70%.

SEMESTER EXAM

Anatomy I (after 2nd semester), Anatomy II (after 4th semester)

STATE EXAM

No.

LECTURER

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DEPARTMENT

Department of Anatomy, Histology and Embryology.

ANNOTATION

Anatomy and histology course presents the structure of the human body by subdividing it into individual body systems and examines them at the cellular, tissue, organ, system, and organism levels. It is intended to meet the requirements for students in medicine. This course satisfies the general education requirement for a fundamental knowledge as a prerequisite for clinical study.

The course is formulated in a manner to enhance student's knowledge of the fundamental of anatomy applicable to the anatomical basis of diseases that pertain to surgical as well as non-surgical fields. It provides medical students with the opportunity to attain an integrated conceptual knowledge of anatomical sciences.

COURSE GOALS

The purpose of this course is to aid students in acquiring a basic understanding of the structures of the human body and their relationships using a systems-based approach. Students will be introduced to anatomic terminology in order to facilitate this understanding. Knowledge of anatomy is a fundamental component of any health care profession.

COURSE OBJECTIVES

1. Gain factual knowledge (anatomic terminology, structures of the human body)
2. Learn fundamental principles and generalizations
3. Understand the gross and microscopic anatomy of organs and systems in the human body
4. Understand the prenatal development of the organs and systems of human body
5. Know the regional anatomy of human body.
6. Develop skills in dissection.
7. Learn to apply course material to improve thinking, problem solving, and decision-making.

EXPECTED OUTCOMES

1. Apply appropriate safety and ethical standards.

2. Use anatomical terminology to identify and describe locations of major organs of each system covered.
3. Describe the gross anatomy of the organs composing organ systems.
4. Relate gross anatomy with tissue level organization and develop histological correlations.
5. Identify important anatomical structures and illustrate anatomical relationships.
6. Relate anatomical structure and function of various organ systems.
7. Understand the role of human anatomy in the field of medicine with specific reference to clinical applications in individual medical professions.
8. Appropriately utilize laboratory equipment, such as microscopes, dissection tools, general lab ware.
9. Describe modern technology and tools used to study anatomy.
10. Work effectively in a group and safely in a lab setting.

LECTURES – TOPICS

LECTURE № 1 – 2 hours

OSTEOLOGY

1. General data.
2. Bone as an organ.
3. Shape and structure of bones.
4. Classification of bones.
5. Growth and development of bones.

LECTURE № 2 – 2 hours

ARTHROLOGY

1. General data.
2. Types of joints.
3. Continuous joints.
 - 3.1.Types
4. Synovial joints.
 - 4.1.Characteristic
 - 4.2.Classification
 - 4.3.Biomechanics

LECTURE № 3 – 2 hours

MYOLOGY

1. General data.
2. Muscle as an organ.
 - 2.1.Structure of the muscle
 - 2.2.Classification of the muscles
3. Supplementary structures of the muscle.
4. Biomechanics.

LECTURE № 4 – 2 hours

MUSCLE GROUPS, BLOOD AND NERVE SUPPLY OF THE UPPER LIMB

1. Muscle groups.
2. Main blood vessels.
3. Innervation.
 - 3.1. General data
 - 3.2. Brachial plexus
 - 3.3. Main branches of the upper limb.

LECTURE № 5 – 2 hours

MUSCLE GROUPS, BLOOD AND NERVE SUPPLY OF THE LOWER LIMB

1. Muscle groups.
2. Main blood vessels.
3. Innervation.
 - 3.1. General data
 - 3.2. Lumbosacral plexus
 - 3.3. Main branches of the lower limb.

LECTURE № 6 – 2 hours

TOPOGRAPHY OF THE UPPER LIMB

1. Topographic regions.
 - 1.1. Boundaries.
 - 1.2. In-depth topography
2. Topographic formations.
 - 2.1. Boundaries
 - 2.2. Content

LECTURE № 7 – 2 hours

TOPOGRAPHY OF THE LOWER LIMB

1. Topographic regions.
 - 1.1. Boundaries.
 - 1.2. In-depth topography
2. Topographic formations.
 - 2.1. Boundaries
 - 2.2. Content

LECTURE № 8 – 2 hours

INTRODUCTION TO MORPHOLOGY OF NERVOUS SYSTEM. SPINAL CORD. SPINAL NERVES.

1. General data.
2. Ontogenesis and phylogeny.
3. External morphology of spinal cord.
4. Internal morphology of spinal cord.
 - 4.1. Cytoarchitectonics

- 4.2. Myeloarchitectonics
- 5. Spinal nerves.
 - 5.1. Formation
- 6. Meninges.
- 7. Blood supply.

LECTURE № 9 – 2 hours

GROSS BRAIN. GENERAL DATA. MEDULLA OBLONGATA

- 1. Gross brain.
 - 1.1. Embryonic development.
 - 1.2. Divisions.
- 2. Medulla oblongata.
 - 2.1. External morphology.
 - 2.2. Internal morphology.
 - 2.2.1. Gray matter.
 - 2.2.2. White matter.

LECTURE № 10 – 2 hours

PONS. RHOMBOID FOSSA. MIDBRAIN

- 1. Pons.
 - 1.1. External morphology.
 - 1.2. Internal morphology.
 - 1.2.1. Gray matter.
 - 1.2.2. White matter.
- 2. Rhomboid fossa.
- 3. Midbrain.
 - 3.1. Sections.
 - 3.2. External morphology.
 - 3.3. Internal morphology.
 - 3.3.1. Gray matter.
 - 3.3.2. White matter.

LECTURE № 11 – 2 hours

CEREBELLUM

- 1. Divisions.
 - 1.1. Vermis – lobules.
 - 1.2. Cerebellar hemispheres – lobules.
- 2. Cerebellar cortex – microscopic structure.
- 3. Gray and white matter.
- 4. Functions.

LECTURE № 12 – 2 hours

DIENCEPHALON I. THALAMUS. EPITHALAMUS. METATHALAMUS

1. Thalamus.
 - 1.1.External morphology.
 - 1.2.Internal morphology. Nuclei.
 - 1.3.Functional significance
2. Epithalamus.
 - 2.1.Morphological structures
 - 2.2.Functional significance
3. Metathalamus.
 - 3.1.Sections
 - 3.2.Functional significance

LECTURE № 13 – 2 hours

DIENCEPHALON II. HYPOTHALAMUS, SUBTHALAMUS

1. Hypothalamus.
 - 1.1.Associated structures
 - 1.2.Nuclei, designation
 - 1.3. Relationships with other CNS structures
2. Subthalamus
 - 2.1.Gray matter
 - 2.2.Relationships with other CNS structures

LECTURE № 14 – 2 hours

FOREBRAIN. GENERAL DESCRIPTION. BRAIN CORTEX

1. General description.
2. Gross anatomy of the hemispheres.
3. Brain cortex.
 - 3.1.Microscopic structure
 - 3.2.Localization of brain functions

LECTURE № 15 – 2 hours

FOREBRAIN. WHITE MATTER. BASAL GANGLIA

1. White matter
 - 1.1.Association fibers
 - 1.2.Commissural fibers
 - 1.3.Projection fibers
2. Basal ganglia
 - 2.1.Location
 - 2.2.Functional significance

LECTURE № 16 – 2 hours

RHINENCEPHALON. LIMBIC SYSTEM

1. Rhinencephalon
 - 1.1.Olfactory bulb
 - 1.2.Olfactory tract

- 1.3. Olfactory trigone
- 1.4 Olfactory center
- 2. Limbic system
 - 2.1 Limbic cortex
 - 2.2 Limbic nuclei
 - 2.3 Limbic tracts

LECTURE № 17– 2 hours

SENSORY ORGANS. EYE.

- 1. Eye bulb.
 - 1.1 Fibrous tunic
 - 1.2 Vascular tunic
 - 1.3 Internal tunic
 - 1.3.1 Retina- microscopic structure
 - 1.4 Inner nucleus
- 2. Accessory organs of the eye.
 - 2.1 Muscles of the eye
 - 2.2 Eye lids
 - 2.3 Conjunctiva
 - 2.4 Lacrimal apparatus
- 3. Visual tract

LECTURE № 18 – 2 hours

SENSORY ORGANS. EAR.

- 1. External ear.
 - 1.1 Ear auricle
 - 1.2 External acoustic meatus
- 2. Middle ear.
 - 2.1 Tympanic membrane
 - 2.2 Tympanic cavity
 - 2.3 Acoustic tube
 - 2.4 Auditory ossicles
- 3. Inner ear.
 - 3.1 Osseous labyrinth
 - 3.2 Membranous labyrinth. Organ of Korti – microscopic structure.
- 4. Auditory and vestibular tract.

LECTURE № 19 – 2 hours

CRANIAL NERVES. PART I

- 1. Common description
 - 1.1 Consecutive number
 - 1.2 Types of fibers
 - 1.3 Functional characteristics
- 2. Nuclei of the cranial nerves in the cerebral trunk.

3. Appearance on the cerebral surface, tract and leaving of the cranial cavity.

LECTURE № 20 – 2 hours

CRANIAL NERVES. PART II

1. Characteristic of each cranial nerve.
2. Branches and regions of nerve supply.

LECTURE № 21– 2 hours

PATHWAYS IN CNS

1. Afferent tracts
 - 1.1 Superficial sensory pathways
 - 1.2 Deep sensory pathways
 - 1.3 Interoceptive sensory pathways
 - 1.4 Specific sensory pathways
2. Efferent tracts
 - 2.1 Pyramidal motor system
 - 2.2 Extrapyramidal motor system

LECTURE № 22 – 2 hours

AUTONOMIC NERVOUS SYSTEM

1. Morphological and functional characteristics.
2. Subdivision.
 - 2.1 Sympathetic part – centers, ganglia and plexuses
 - 2.2 Parasympathetic part – centers, ganglia and plexuses
 - 2.3 Morphological and functional differences.

LECTURE № 23 – 2 hours

CARDIOVASCULAR SYSTEM

1. Embryonal development.
2. Large and small circulatory circles.
3. Fetal circulation.
4. Heart.
 - 4.1 Macroscopic anatomy
 - 4.2 Microscopic anatomy
 - 4.3 Blood and nerve supply

LECTURE № 24 – 2 hours

CARDIOVASCULAR SYSTEM

1. Blood vessels.
 - 1.1 Embryonal development
 - 1.2 Large vessels
 - 1.3 Macroscopic structure
 - 1.4 Microscopic structure

2. Lymph system.
 - 2.1 General data
 - 2.2 Lymph vessels
 - 2.3 Lymph

LECTURE № 25 – 2 hours

IMMUNE SYSTEM

1. General characteristics.
2. Embryonal development.
3. Bone marrow, thymus, spleen и lymph nodes.
 - 3.1 Macroscopic structure
 - 3.2 Microscopic structure
 - 3.3 Blood and nerve supply

LECTURE № 26 – 2 hours

RESPIRATORY SYSTEM

1. Embryonal development.
2. Principal structure of its organs.
3. Nasal cavity, larynx, trachea and lungs.
 - 3.1 Macroscopic structure
 - 3.2 Microscopic structure
 - 3.3 Blood and nerve supply

LECTURE № 27 – 2 hours

DIGESTIVE SYSTEM

1. Oral cavity.
 - 1.1 Embryonal development
 - 1.2 General characteristics
2. Tongue, salivary glands and teeth
 - 2.1 Embryonal development
 - 2.2 Macroscopic structure
 - 2.3 Microscopic structure
 - 2.4 Blood and nerve supply

LECTURE № 28 – 2 hours

DIGESTIVE SYSTEM

1. Pharynx, esophagus and stomach.
 - 1.1 Embryonal development
 - 1.2 Macroscopic structure
 - 1.3 Microscopic structure
 - 1.4 Blood and nerve supply

LECTURE № 29 – 2 hours

DIGESTIVE SYSTEM

1. Small, large intestine, appendix.
 - 1.1 Embryonal development
 - 1.2 Macroscopic structure
 - 1.3 Microscopic structure
 - 1.4 Blood and nerve supply

LECTURE № 30 – 2 hours

DIGESTIVE SYSTEM

1. Liver, intra- and extrahepatic ducts, gall bladder and pancreas.
 - 1.1 Embryonal development
 - 1.2 Macroscopic structure
 - 1.3 Microscopic structure
 - 1.4 Blood and nerve supply

LECTURE № 31 – 2 hours

URINARY SYSTEM

1. Embryonal development and principal structure of its organs. Kidney, urethra, ureter
 - 1.1 Macroscopic structure
 - 1.2 Microscopic structure
 - 1.3 Blood and nerve supply

LECTURE № 32 – 2 hours

ENDOCRINE SYSTEM

1. General characteristics and classification.
2. Hypothalamo-hypophyseal system.
3. Hypophysis, epiphysis, adrenal, thyroid and parathyroid glands.
 - 3.1 Embryonal development
 - 3.2 Macroscopic structure
 - 3.3 Microscopic structure
 - 3.4 Blood and nerve supply

LECTURE № 33 – 2 hours

ENDOCRINE SYSTEM AND MALE REPRODUCTIVE SYSTEM

1. Endocrine cells in other non-endocrine organs.
 - 1.1 Microscopic structure
2. APUD-system. General characteristics.
3. Male reproductive system. Embryonal development and general characteristics.
4. Testis.
 - 4.1 Macroscopic structure
 - 4.2 Microscopic structure
 - 4.3 Blood and nerve supply

LECTURE № 34 – 2 hours

MALE REPRODUCTIVE SYSTEM

1. Epididymis, prostate, seminal vesicles, penis and urethra
 - 1.1 Macroscopic structure
 - 1.2 Microscopic structure
 - 1.3 Blood and nerve supply

LECTURE № 35 – 2 hours

FEMALE REPRODUCTIVE SYSTEM

1. Ovary.
 - 1.1 Embryonal development
 - 1.2 Macroscopic structure
 - 1.3 Microscopic structure
 - 1.4 Blood and nerve supply

LECTURE № 36 – 2 hours

FEMALE REPRODUCTIVE SYSTEM

1. Uterus, uterine tubes, vagina and external genital organs.
 - 1.1 Embryonal development
 - 1.2 Macroscopic structure
 - 1.3 Microscopic structure
 - 1.4 Blood and nerve supply

LECTURE № 37 – 2 hours

INTEGUMENTAL SYSTEM

1. Skin and skin appendages.
 - 1.1 Embryonal development.
 - 1.2 Macroscopic structure
 - 1.3 Microscopic structure

LECTURE № 38 – 2 hours

REGIONAL ANATOMY OF CADAVER

1. Back.
 - 1.1 Regions
 - 1.2 Superficial muscles of the back
 - 1.3 Deep muscles of the back

LECTURE № 39 – 2 hours

NECK TOPOGRAPHY

1. Subcutaneous elements.
2. Cervical fascia.
3. Regions.

LECTURE № 40 – 2 hours

TOPOGRAPHY OF THE THORAX

1. Thoracic cavity.
2. Pleural cavity.
3. Mediastinum.
 - 3.1 Subdivisions
 - 3.2 Content

LECTURE № 41 – 2 hours

TOPOGRAPHY OF THE ABDOMEN

1. Abdominal wall.
 - 1.1 Muscles, vessels and nerves
 - 1.2 Layered topography
2. Inguinal canal.
 - 2.1 Morphological description
 - 2.2 Content
3. Abdominal and peritoneal cavity.
 - 3.1 Subdivision
4. Upper peritoneal region.
 - 4.1 Boundaries.
 - 4.2 Peritoneal structures and spaces
 - 4.3 Viscera

LECTURE № 42 – 2 hours

TOPOGRAPHY OF THE ABDOMEN

1. Lower peritoneal region.
 - 4.1 Boundaries.
 - 4.2 Peritoneal structures and spaces
 - 4.3 Viscera
2. Retroperitoneal space.
 - 1.1 Boundaries
 - 2.1 Primary and secondary retroperitoneal organs
 - 3.1 Vessels and nerves

LECTURE № 43 – 2 hours

TOPOGRAPHY OF THE PELVIS

1. Peritoneal, subperitoneal and subcutaneous compartment.
2. Viscera, spaces, muscles and fascia.

LECTURE № 44 – 2 hours

TOPOGRAPHY OF THE HEAD

1. Regions.
2. Blood and nerve supply, lymphatic drainage

3. Frontoparietooccipital region
 - 3.1 Boundaries
 - 3.2 Layered topography
 - 3.3 Content
4. Parotideomasseteric region
 - 4.1 Boundaries
 - 4.2 Layered topography
 - 4.3 Content

LECTURE № 45 – 2 hours

TOPOGRAPHY OF THE HEAD

1. Temporal region.
 - 1.1 Boundaries
 - 1.2 Layered topography
 - 1.3 Content
2. Infratemporal region.
 - 2.1 Boundaries
 - 2.2 Layered topography
 - 2.3 Content
3. Peripharyngeal space.

PRACTICAL LESSONS

FIRST SEMESTER LOCOMOTORY SYSTEM

PRACTICAL LESSON № 1 – 2 hours

INTRODUCTION TO NORMAL MORPHOLOGY. OSTEOLOGY

1. Vertebral column.
 - 1.1 General data.
 - 1.2 Vertebrae- structure
2. Typical vertebrae. Regional features in their morphology.
3. Atypical vertebrae.
4. Vertebral column as a whole.

PRACTICAL LESSON № 2– 1 hour

BONES OF THE THORAX AND SHOULDER GIRDLE

1. Ribs. Types. Common and specific morphological characteristic.
2. Sternum. Morphological characteristics.
3. Bones of the shoulder girdle.
 - 3.1 Clavicle. Morphological characteristics.
 - 3.2 Scapula. Morphological characteristics.

PRACTICAL LESSON № 3 – 2 hours

BONES OF THE UPPER LIMB

1. Humerus. Morphological characteristics
2. Radius and ulna. Morphological characteristics.
3. Bones of the hand.
 - 3.1 Bones of the wrist. Morphological characteristics.
 - 3.1.1 Proximal wrist row
 - 3.1.2 Distal wrist row
 - 3.2 Metacarpal bones. Morphological characteristic.
 - 3.3 Bones of the phalanges of the hand. Morphological characteristic.

PRACTICAL LESSON № 4 – 1 hour

BONES OF THE PELVIS

1. Sacral and coccygeal bone. Morphological characteristics.
2. Hip bone. Morphological characteristics.
3. Pelvis as a whole.

PRACTICAL LESSON № 5 – 2 hours

BONES OF THE LOWER EXTREMITY

1. Femur. Morphological characteristic
2. Tibia and fibula. Morphological characteristic.
3. Bones of the foot.
 - 3.1 Tarsal bones. Morphological characteristic
 - 3.1.1 Talar bone
 - 3.1.2 Calcaneal bone
 - 3.1.3 Navicular bone
 - 3.1.4 Cuneiform bones
 - 3.1.5 Cuboid bone
 - 3.1.6 Metatarsal bones. Morphological characteristics.
 - 3.1.7 Bones of the phalanges of the foot. Morphological characteristic.

PRACTICAL LESSON № 6– 1 hour

TEST ON THE SKELETAL SYSTEM

PRACTICAL LESSON № 7 – 2 hours

SHOULDER REGION. JOINTS OF THE SHOULDER GIRDLE

1. Sternoclavicular joint. Biomechanics.
2. Acromioclavicular joint. Biomechanics.
3. Shoulder joint. Biomechanics.

PRACTICAL LESSON № 8 – 1 hour

PELVIC REGION. JOINTS OF THE PELVIC GIRDLE

1. Sacral joint. Biomechanics.
2. Pubic joint.
3. Ligaments and membranes of the pelvic girdle.
4. Pelvis as a whole.
5. Hip joint. Biomechanics.

PRACTICAL LESSON № 9 – 2 hours

SHOULDER REGION

1. Boundaries.
- 1.1 Layered topography.
 2. Muscles of the shoulder girdle.
 - 1.1 Own muscles
 - 1.2 Thoracic muscles
 - 1.3 Back muscles
 3. Brachial plexus.
- 3.1 Formation
- 3.2 Branches
 4. Vessels
 - 4.1 Arteries
 - 4.1.1 Axillary artery
 - 4.1.1.1 Branches
 - 4.2 Veins- superficial and deep

PRACTICAL LESSON № 10 – 1 hour

PELVIC REGION

1. Pelvis
 - 1.1 Muscles
2. Pelvic region
 - 2.1 Boundaries
 - 2.2 Layered topography
3. Muscles of the pelvic girdle
4. Sacral and lumbar plexus
- 3.1 Formation
- 3.2 Branches
 5. Vessels
 - 5.1 Arteries
 - 5.1.1. Common iliac artery.
 - 5.1.1.1 External iliac artery. Branches.
 - 5.1.1.2 Internal iliac artery. Branches.
 - 5.2 Veins- superficial and deep

PRACTICAL LESSON № 11 – 2 hours

TOPOGRAPHY OF THE SHOULDER AND PELVIC REGIONS

1. Topography of the shoulder region

- 1.1 Boundaries
- 1.2 Content
- 2. Topography of the pelvic region.
 - 2.1 Boundaries
 - 2.2 Content

PRACTICAL LESSON № 12 – 1 hour

JOINTS OF THE UPPER AND LOWER EXTREMITIES

- 1. Elbow joint. Biomechanics
- 2. Knee joint. Biomechanics.

PRACTICAL LESSON № 13 – 2 hours

BRACHIAL REGION

- 1. Boundaries.
 - 1.1 Layered topography
- 2. Muscles
 - 2.1 Anterior muscle group
 - 2.2 Posterior muscle group
- 3. Vessels
 - 3.1 Arteries
 - 3.1.1 Brachial artery. Branches.
 - 3.2 Veins- superficial and deep
- 4. Nerves.

PRACTICAL LESSON № 14 – 1 hour

FEMORAL REGION

- 1. Boundaries.
 - 1.1 Layered topography
- 2. Muscles
 - 2.1 Anterior muscle group
 - 2.2 Posterior muscle group
 - 2.3 Medial muscle group
- 3. Vessels.
 - 3.1 Arteries
 - 3.1 Femoral artery. Branches.
 - 3.2 Veins- superficial and deep
- 4. Nerves.

PRACTICAL LESSON № 15 – 2 hours

BRACHIAL REGION

- 1. Topography of the brachial region.
 - 1.1 Boundaries
 - 1.2 Content

PRACTICAL LESSON № 16 – 1 hour

FEMORAL REGION

1. Topography of the femoral region.
 - 1.1 Boundaries
 - 1.2 Content

PRACTICAL LESSON № 17 – 2 hours

TEST. PRACTICAL QUIZ.

PRACTICAL LESSON № 18 – 1 hour

ELBOW AND KNEE REGIONS.

1. Elbow region.
 - 1.1 Boundaries
 - 1.2 Anterior elbow region
 - 1.2.1 Layered topography
 - 1.2.2 Vessels and nerves
 - 1.3 Posterior elbow region
 - 1.3.1 Layered topography
 - 1.3.2 Vessels and nerves
2. Knee region.
 - 2.1 Boundaries
 - 2.2 Anterior knee region
 - 2.2.1 Layered topography
 - 2.2.2 Vessels and nerves
 - 2.3 Posterior knee region
 - 2.3.1 Layered topography
 - 2.3.2 Vessels and nerves

PRACTICAL LESSON № 19 – 2 hours

THE CARPUS

1. Carpal joints.
 - 1.1 Wrist joint.
 - 1.2 Midcarpal joint
 - 1.3 Intercarpal joints.
2. Joints of the hand.
 - 2.1 Carpometacarpal joints
 - 2.2 Metacarpophalangeal joints
 - 2.3 Joints of the digits
3. Biomechanics
4. Regions of the wrist.
 - 4.1 Boundaries
 - 4.2 Layered topography
 - 4.3 Topographic structures

PRACTICAL LESSON № 20 – 1 hour

ANKLE JOINT. JOINTS OF THE FOOT

1. Ankle joint. Biomechanics.
2. Joints of the foot.
 - 2.1 Subtalar joint
 - 2.2 Calcaneocuboid joint
 - 2.3 Cuneonavicular joint
 - 2.4 Tarsometatarsal joints
 - 2.5 Interphalangeal joints
3. The foot as a whole. Biomechanics.

PRACTICAL LESSON № 21 – 2 hours

MUSCLES, VESSELS AND NERVES OF THE FOREARM

1. Boundaries.
 - 1.1 Layered topography
2. Muscles
 - 2.1 Anterior muscle group
 - 2.2 Posterior muscle group
 - 2.3 Lateral muscle group
3. Vessels.
 - 3.1 Arteries
 - 3.1.1 Ulnar artery. Branches.
 - 3.1.2 Radial artery. Branches.
 - 3.2 Veins- superficial and deep
4. Nerves

PRACTICAL LESSON № 22 – 1 hour

MUSCLES, VESSELS AND NERVES OF THE LEG

1. Boundaries.
 - 1.1 Layered topography
2. Muscles
 - 2.1 Anterior muscle group
 - 2.2 Posterior muscle group
 - 2.3 Lateral muscle group
3. Vessels.
 - 3.1 Arteries
 - 3.1.1 Anterior tibial artery. Branches.
 - 3.1.2 Posterior tibial artery. Branches.
 - 3.2 Veins- superficial and deep
4. Nerves

PRACTICAL LESSON № 23 - 2 hours

TOPOGRAPHY OF THE FOREARM AND THE LEG

1. Topography of the forearm.
 - 1.1 Boundaries

- 1.2 Content
- 2. Topography of the leg.
 - 2.1 Boundaries
 - 2.2 Content

PRACTICAL LESSON № 24 – 1 hour

HAND

- 1. Hand. Regions.
 - 1.1 Boundaries
 - 1.2 Layered topography
- 2. Muscles of the hand.
 - 2.1 Muscles of the thenar
 - 2.2 Muscles of the hypothenar
 - 2.3 Middle muscle group of the hand
- 3. Vessels
 - 3.1 Arteries
 - 3.2 Veins
- 4. Nerves

PRACTICAL LESSON № 25 – 2 hours

FOOT

- 1. Regions of the foot. Boundaries.
 - 1.1 Layered topography
- 2. Muscles of the foot.
 - 2.1 Muscles of the back of the foot.
 - 2.2 Muscles of the foot.
- 3. Arteries.
- 4. Veins.
- 5. Nerves.

PRACTICAL LESSON № 26 – 1 hour

TOPOGRAPHY OF THE HAND AND THE FOOT

- 1. Topography of the hand.
 - 1.1 Boundaries
 - 1.2 Content
- 2. Topography of the foot.
 - 2.1 Boundaries
 - 2.2 Content

PRACTICAL LESSON № 27 – 2 hours

JOINTS OF THE VERTEBRAL COLUMN

- 1. Vertebral joints.
 - 1.1 Intervertebral disks.
 - 2. Joints between the arches and the processes.

3. Types of the joints.
4. Joints between the vertebral column and the cranium.
5. Biomechanics.

PRACTICAL LESSON № 28 – 1 hour

JOINTS OF THE THORAX

1. Joints between the vertebral column and the ribs.
 - 1.1 Costal joints
 - 1.2 Costotransversal joints
2. Joints between the ribs and the sternal bone.
3. Biomechanics of the thorax.
4. The thorax as a whole.

PRACTICAL LESSON № 29 – 2 hours

DISCUSSION ON THE DISSECTION PREPARATIONS

PRACTICAL LESSON № 30 – 1 hour

TEST. PRACTICAL QUIZ.

**SECOND SEMESTER
NERVE SYSTEM AND SENSORY ORGANS**

PRACTICAL LESSON № 1 – 2 hours

CRANIUM

1. Frontal bone.
 - 1.1 Parts. Morphological description.
2. Parietal bone. Morphological description.
 3. Occipital bone.
 - 3.1 Parts. Morphological description.
 4. Vault. Skull of a newborn.

PRACTICAL LESSON № 2– 2 hours

CRANIUM

1. Temporal bone.
 - 1.1 Parts. Morphological description.
 - 1.2 Cavities and canals.
2. Ethmoid bone.
 - 2.1 Parts. Morphological description

PRACTICAL LESSON № 3 – 2 hours

CRANIUM

1. Sphenoid bone.

- 1.1 Parts. Morphological description.
 2. Facial bones.
 - 2.1 Mandible
 - 2.2 Maxilla
 - 2.3 Zygomatic bone
 - 2.4 Palatal bone
 - 2.5 Inferior nasal concha
 - 2.6 Nasal bones
 - 2.7 Lacrimal bone
 - 2.8 Vomer
 - 2.9 Infrahyoid bone

PRACTICAL LESSON № 4 – 2 hours

CRANIUM

1. Nasal cavity.
 - 1.1 Walls
 - 1.2 Communications
2. Paranasal sinuses.
3. Orbit.
 - 3.1 Walls

PRACTICAL LESSON № 5 – 2 hours

CRANIUM

1. External cranial base
2. Internal cranial base.
3. Temporal fossa.
 - 3.1 Boundaries
 - 3.2 Communications
4. Infratemporal fossa
 - 4.1 Boundaries
 - 4.2 Communications
5. Pterygopalatine fossa.
 - 5.1 Boundaries
 - 5.2 Communications

PRACTICAL LESSON № 6 – 2 hours

TEST. PRACTICAL QUIZ.

PRACTICAL LESSON № 7 – 2 hours

SPINAL CORD

1. Macroscopic structure.
2. Spinal nerves.
 - 2.1 Formation

PRACTICAL LESSON № 8 – 2 hours

MICROSCOPIC LESSONS

1. Spinal cord. Microscopic structure.
2. Spinal ganglion. Microscopic structure
3. Autonomic ganglion. Microscopic structure.
4. Peripheral nerve. Microscopic structure.

PRACTICAL LESSON № 9 – 2 hours

CEREBRAL TRUNK

1. Medulla oblongata.
 - 1.1 External structure
 - 1.2 Internal structure
 - 1.2.1 Grey matter
 - 1.2.2 White matter
2. Pons.
 - 2.1 External structure
 - 2.2 Internal structure
 - 2.2.1 Grey matter
 - 2.2.2 White matter
3. Rhomboid fossa.

PRACTICAL LESSON № 10 – 2 hrs.

BRAIN STEM AND CEREBELLUM

1. Midbrain.
 - 1.1 Division
 - 1.1.1 Cerebral crura
 - 1.1.2 Mesencephalic tegmentum
 - 1.1.3 Tectum
 - 1.2 White matter
 - 1.3 Grey matter
2. Cerebellum.
 - 2.1 Vermis, lobules
 - 2.2 Cerebellar hemispheres, lobules
 - 2.3 Cerebellar nuclei
 - 2.4 Cerebellar peduncles – afferent and efferent connections
 - 2.5 Functions
3. Fourth ventricle.

PRACTICAL LESSON № 11 – 2 hrs.

DIENCEPHALON

1. Thalamus.
 - 1.1 External view

- 1.2 Internal structure. Nuclei
- 1.3 Functional importance
- 2. Epithalamus
 - 1.1 Parts
 - 1.2 Functional importance
- 3. Metathalamus.
 - 3.1 Medial geniculate body
 - 3.2 Lateral geniculate body
 - 3.2 Functional importance

PRACTICAL LESSON № 12 – 2 hrs.

DIENCEPHALON

- 1. Hypothalamus.
 - 1.1 Parts
 - 1.2 Nuclei
 - 1.3 Functional importance
- 2. Subthalamic area.
 - 2.1 Nuclei
 - 2.2 Functional importance
- 3. Third ventricle.

PRACTICAL LESSON № 13 – 2 hrs.

PRACTICAL AND THEORETICAL QUIZ.

PRACTICAL LESSON № 14 – 2 hrs.

TELENCEPHALON

- 1. Exterior of the cerebral hemispheres.
 - 1.1 Sulci
 - 1.2 Gyri
 - 1.3 Lobes
- 2. Localization of functions in the cerebral cortex. Brodmann's areas.
 - 2.1 Somatomotor areas.
 - 2.2 Somatosensory areas.
 - 2.3 Visual cortex.
 - 2.4 Auditory cortex.
 - 2.5 Gnostic areas.
 - 2.6 Vestibular cortical area.
 - 2.7 Taste cortical area.
 - 2.8 Olfactory cortical area.
 - 2.9 Prefrontal cortex.

PRACTICAL LESSON № 15 – 2 hrs.

TELENCEPHALON

- 1. Cerebral white matter.

- 1.1 Association fibers
- 1.2 Commissural fibers
- 1.3 Projection fibers
- 2. Basal ganglia (basal nuclei).
 - 2.1 Functional importance
- 3. Lateral ventricle.

PRACTICAL LESSON № 16 – 2 hrs.

MICROSCOPIC LESSON

- 1. Cerebellar cortex. Microscopic structure.
- 2. Cerebral cortex. Microscopic structure.

PRACTICAL LESSON № 17 – 2 hrs.

RHINENCEPHALON AND LIMBIC SYSTEM.

- 1. Rhinencephalon.
 - 1.1 Olfactory bulb
 - 1.2 Olfactory tract
 - 1.3 Olfactory trigone
 - 1.4 Olfactory cortex
- 2. Limbic system.
 - 2.1 Limbic cortex
 - 2.2 Limbic nuclei
 - 2.3 Limbic pathways
 - 2.4 Functional importance

PRACTICAL LESSON № 18 – 2 hrs.

MENINGES AND BLOOD SUPPLY OF THE BRAIN

- 1. Meninges of the brain.
 - 1.1 Dura mater
 - 1.1.1 Reflections
 - 1.1.1.1 Falx cerebri
 - 1.1.1.2 Tentorium cerebelli
 - 1.1.1.3 Falx cerebelli
 - 1.1.1.4 Diaphragma cellae
 - 1.1.1.5 Dural venous sinuses
 - 1.2 Arachnoid matter encephali
 - 1.2.1 Arachnoid granulations
 - 1.3 Pia matter encephali
- 2. Blood supply of the brain.
 - 2.1 Internal carotid artery.
 - 2.1.1 Branches
 - 2.1.1.1 Anterior cerebral artery
 - 2.1.1.2 Middle cerebral artery
 - 2.2 Intracranial portion of the vertebral artery

- 2.3 Arterial circle of Willis
- 3. Blood supply of the spinal cord.
 - 3.1 Anterior spinal artery
 - 3.2 Posterior spinal artery

PRACTICAL LESSON № 19 – 2 hrs.

MICROSCOPIC LESSON

- 1. Receptors of general sensation.
- 2. Receptors of special sensation.

PRACTICAL LESSON № 20 – 2 hrs.

PRACTICAL AND THEORETICAL QUIZ.

PRACTICAL LESSON № 21 – 2 hrs.

SENSORY ORGANS. THE EYE.

- 1. Eyeball.
 - 1.2 Outer (fibrous) coat
 - 1.2 Middle (vascular) coat
 - 1.3 Internal coat
 - 1.3.1 Retina – microscopic structure
 - 1.4 The refracting media of the eye
- 2. The accessory organs of the eye.
 - 2.1 Extraocular muscles
 - 2.2 Eyelids
 - 2.3 Conjunctiva
 - 2.4 Lacrimal apparatus
- 3. Visual pathway.

PRACTICAL LESSON № 22 – 2 hrs.

SENSORY ORGANS. THE EAR.

- 1. External ear.
 - 1.1 Auricle (pinna)
 - 1.2 External acoustic meatus
- 2. Middle ear.
 - 2.1 Tympanic membrane
 - 2.2 Tympanic cavity
 - 2.3 Pharyngotympanic (auditory) tube
 - 2.4 Auditory ossicles

PRACTICAL LESSON № 23 – 2 hrs.

SENSORY ORGANS. THE EAR.

- 1. Internal ear.
 - 1.1 Bony labyrinth.
 - 1.2 Membranous labyrinth.
- 2. Auditory and vestibular pathways.

PRACTICAL LESSON № 24 – 2 hrs.

MICROSCOPIC LESSON

1. Microscopic structure of the eyeball.
 - 1.1 Iridocorneal angle
 - 1.2 Retina
2. Microscopic structure of the spiral organ of Corti.
3. Histological slides.
 - 3.1 Wall of the eye - H-E staining
 - 3.2 Ear – spiral organ of Corti - H-E staining

PRACTICAL LESSON № 25 – 2 hrs.

AUTONOMIC NERVOUS SYSTEM

1. Sympathetic division of the autonomic nervous system – centers, ganglia, plexuses.
2. Parasympathetic division of the autonomic nervous system – centers, ganglia, plexuses.
3. Morphological and functional differences.

PRACTICAL LESSON № 26 – 2 hrs.

CRANIAL NERVES

1. General description.
2. General principles of formation.
3. Characteristics of the nerve.
 - 3.1 Nuclei - position, characteristic
 - 3.2 Appearance on the brain surface
 - 3.3 Course of the nerve and exit from the skull
 - 3.4 Branches and area of distribution
4. III, IV, VI, XI, XII cranial nerves.

PRACTICAL LESSON № 27 – 2 hrs.

CRANIAL NERVES

1. V, IX cranial nerves.

PRACTICAL LESSON № 28 – 2 hrs.

CRANIAL NERVES

1. VII, X cranial nerves.

PRACTICAL LESSON № 29 – 2 hrs.

PRACTICAL AND THEORETICAL QUIZ

PRACTICAL LESSON № 30 – 2 hrs.

PATHWAYS IN THE CNS

1. Afferent (ascending) sensory systems.

- 1.1 Sensory system for discriminative touch and proprioception
- 1.2 Sensory system for pain and temperature
- 1.3 Pathways of unconscious proprioception
- 1.4 Visceral somatosensory pathways
- 1.5 Visual sensory system
- 1.6 Auditory sensory system
- 1.7 Vestibular sensory system
- 1.8 Gustatory sensory system
- 1.9 Olfactory sensory system
- 2. Efferent pathways from the cerebral cortex.
 - 2.1 Pyramid motor system
 - 2.2 Extrapyramidal motor system

THIRD SEMESTER

ANATOMY AND HISTOLOGY OF THE INTERNAL ORGANS

PRACTICAL LESSON № 1 – 2 hrs.

PRINCIPAL STRUCTURE OF A TUBE AND PARENCHYMATOUS ORGANS

- 1. Principal structure of a tube organ.
 - 1.1 Tunica interna
 - 1.2 Tunica media
 - 1.3 Tunica externa
- 2. Principal structure of a parenchymatous organ.
 - 2.1 Stroma
 - 2.2 Parenchyma

PRACTICAL LESSON № 2 – 2 hrs.

CARDIOVASCULAR SYSTEM

- 1. Macroscopic and microscopic structure of the blood vessels.
 - 1.1 Arteries
 - 1.1.1 Arteries of muscular type
 - 1.1.2 Arteries of elastic type
 - 1.1.3 Arteries of mixed type
 - 1.2 Classification of the veins
 - 1.3 Capillaries
 - 1.3.1 Continuous capillaries
 - 1.3.2 Fenestrated capillaries
 - 1.3.3 Discontinuous capillaries
- 2. Histological sections.
 - 2.1 Artery and vein of muscular type - H-E staining
 - 2.2 Aorta – orcein staining, H-E staining

- 2.3 Capillaries – H-E staining
- 3. Electronograms.
 - 3.1 Capillary
 - 3.2 Fenestrated capillary

PRACTICAL LESSON № 3 – 2 hrs.

CARDIOVASCULAR SYSTEM. HEART.

- 1. Macroscopic anatomy.
 - 1.1 Cardiac size, shape and external features.
 - 1.2 Left and right auricles
 - 1.3 Left and right ventricles
 - 1.4 Valves of the heart
 - 1.5 Fibrous skeleton
 - 1.6 Impulse-conducting system of the heart
- 2. Microscopic anatomy.
 - 2.1 Histological sections
 - 2.1.1 Heart wall - H-E staining
 - 2.1.2 Impulse-conducting system – H-E staining

PRACTICAL LESSON № 4 – 2 hrs.

IMMUNE SYSTEM. BONE MARROW, THYMUS, LYMPH NODE

- 1. Macroscopic anatomy of the thymus.
 - 1.1 Position
 - 1.2 Morphological characteristics
- 2. Microscopic anatomy.
 - 2.1 Histological sections
 - 2.1.1 Lymph node - H-E staining
 - 2.1.2 Thymus - H-E staining
 - 2.1.3 Bone marrow – H-E staining

PRACTICAL LESSON № 5 – 2 hrs.

IMMUNE SYSTEM. SPLEEN AND TONSILS

- 1. Macroscopic anatomy of the spleen and palatine tonsil.
 - 1.1 Position
 - 1.2 Parts - morphological characteristics
- 2. Microscopic anatomy.
 - 2.1 Histological sections
 - 2.1.1 Spleen – H-E staining
 - 2.1.2 Palatine tonsil – H-E staining

PRACTICAL LESSON № 6 – 2 hrs.

RESPIRATORY SYSTEM. NASAL CAVITY AND PARANASAL AIR SINUSES

- 1. Macroscopic anatomy of the nasal cavity and paranasal air sinuses

- 1.1 Position
 - 1.2 Walls of the nasal cavity
2. Microscopic anatomy.
 - 2.1 Histological sections
 - 2.1.1 Nasal mucosa – H-E staining

PRACTICAL LESSON № 7 – 2 hrs.

RESPIRATORY SYSTEM. LARYNX

1. Macroscopic anatomy of the larynx.
 - 1.1 Position
 - 1.2 Parts - morphological characteristics
2. Microscopic anatomy.
 - 2.1 Histological sections
 - 2.1.1 Larynx – H-E staining
 - 2.1.2 Epiglottis – H-E staining

PRACTICAL LESSON № 8 – 2 hrs.

RESPIRATORY SYSTEM. TRACHEA

1. Macroscopic anatomy of the trachea.
 - 1.1 Position
 - 1.2 Morphological characteristics
2. Microscopic anatomy.
 - 2.1 Histological sections
 - 2.1.1 Trachea – H-E staining

PRACTICAL LESSON № 9 – 2 hrs.

RESPIRATORY SYSTEM. BRONCHIAL TREE AND LUNGS

1. Macroscopic anatomy of the bronchial tree.
 - 1.1 Lobar bronchi
 - 1.2 Segmental bronchi
 - 1.3 Subsegmental bronchi
 - 1.4 Lobular bronchi
 - 1.5 Terminal bronchioli
2. Macroscopic anatomy of the lungs.
 - 2.1 Shape, position, surfaces
 - 2.2 Fissures and lobes
 - 2.3 Hilum of the lung
3. Microscopic anatomy.
 - 3.1 Histological sections
 - 3.1.1 Lung of adult - H-E staining
 - 3.1.2 Small and middle-sized bronchi – H-E staining
 - 3.1.3 Embryonic lung – H-E staining
4. Electronograms.
 - 4.1 Alveolocyte II type

4.2 Blood-air barrier

PRACTICAL LESSON № 10 – 2 hrs.

DIGESTIVE SYSTEM. ORAL CAVITY

1. Macroscopic anatomy of the oral cavity.
 - 1.1 Oral vestibule
 - 1.2 Oral cavity proper
 - 1.3 Lips
 - 1.4 Palate
 - 1.4.1 Hard palate
 - 1.4.2 Soft palate
 - 1.5 Gums (gingiva)
- 2 Microscopic anatomy.
 - 2.1 Histological sections
 - 2.1.1 Lips– H-E staining
 - 2.1.2 Cheeks – H-E staining
 - 2.1.3 Uvula – H-E staining

PRACTICAL LESSON № 11 – 2 hrs.

PRACTICAL AND THEORETICAL QUIZ ON CARDIOVASCULAR, RESPIRATORY AND IMMUNE SYSTEM

PRACTICAL LESSON № 12– 2 hrs.

DIGESTIVE SYSTEM. TEETH

1. Macroscopic anatomy of the tooth.
 - 1.1 Crown
 - 1.2 Neck
 - 1.3 Root
 - 1.4 Pulp cavity
2. Functional groups of teeth.
 - 2.1 Incisors
 - 2.2 Canines
 - 2.3 Premolars
 - 2.4 Molars
3. Deciduous dentition
4. Microscopic anatomy of the tooth.
 - 4.1 Histological sections
 - 4.1.1 Embryonic tooth – H-E staining
 - 4.1.2 Adult tooth - H-E staining
 - 4.1.3 Adult tooth – Schliff

PRACTICAL LESSON № 13– 2 hrs.

DIGESTIVE SYSTEM. TONGUE, SALIVARY GLANDS

1. Macroscopic anatomy of the tongue.
 - 1.1 Parts - morphological characteristics
2. Macroscopic anatomy of the major salivary glands.
 - 2.1 Parotid gland
 - 2.2 Submandibular gland
 - 2.3 Sublingual gland
3. Microscopic anatomy of the tongue and salivary glands.
 - 3.1 Histological sections
 - 3.1.1 Tongue, filiform papillae – H-E staining
 - 3.1.2 Tongue, circumvallate papillae– H-E staining
 - 3.1.3 Parotid gland – H-E staining
 - 3.1.4 Submandibular gland – H-E staining
 - 3.1.5 Sublingual gland – H-E staining

PRACTICAL LESSON № 14– 2 hrs.

DIGESTIVE SYSTEM. PHARYNX AND ESOPHAGUS

1. Macroscopic anatomy of the pharynx.
 - 1.1 Position
 - 1.2 Parts - morphological characteristics
 - 1.2.1 Nasopharynx
 - 1.2.2 Oropharynx
 - 1.2.3 Laryngopharynx
2. Macroscopic anatomy of the esophagus.
 - 2.1 Position
 - 2.2 Parts - morphological characteristics
 - 2.2.1 Anatomical constrictions
 - 2.2.2 Physiological constrictions
3. Microscopic anatomy.
 - 3.1 Histological sections
 - 3.1.1 Esophagus – H-E staining

PRACTICAL LESSON № 15– 2 hrs

DIGESTIVE SYSTEM. STOMACH

1. Macroscopic anatomy of the stomach.
 - 1.1 Position
 - 1.2 Parts - morphological characteristics
2. Microscopic anatomy.
 - 2.1 Histological sections
 - 2.1.1 Stomach – fundus - H-E staining
 - 2.1.2 Stomach – pylorus – H-E staining
3. Electronograms.
 - 3.1 Parietal, chief and endocrine cells of gastric gland

PRACTICAL LESSON № 16– 2 hrs.

DIGESTIVE SYSTEM. SMALL AND LARGE INTESTINE

1. Macroscopic anatomy of the small intestine.
 - 1.1 Position
 - 1.2 Parts - morphological characteristics
 - 1.2.1 Duodenum
 - 1.2.2 Jejunum
 - 1.2.3 Ileum
2. Macroscopic anatomy of the large intestine.
 - 2.1 Position
 - 2.2 Parts - morphological characteristics
 - 2.2.1 Cecum
 - 2.2.2 Colon
 - 2.2.3 Rectum
3. Microscopic anatomy of small and large intestine.
 - 3.1 Histological sections
 - 3.1.1 Small intestine - H-E staining
 - 3.1.2 Duodenum – H-E staining
 - 3.1.3 Large intestine – H-E staining
 - 3.1.4 Appendix – H-E staining
4. Electronograms.
 - 4.1 Goblet and resorptive cells of small intestine

PRACTICAL LESSON № 17 – 2 HOURS

DIGESTIVE SYSTEM. LIVER, INTRA AND EXTRAHEPATIC EXCRETORY PATHWAYS, PANCREAS

1. Macroscopic structure of the liver.
 - 1.1 Location
 - 1.2 Surfaces
 - 1.3 Grooves and lobes
 - 1.4 Porta hepatis
2. Macroscopic device of the gallbladder.
 - 2.1 Location
 - 2.2 Parts
 - 2.2.1 Fundus
 - 2.2.2 Body
 - 2.2.3 Cervix
3. Macroscopic structure of the pancreas.
 - 3.1 Location
 - 3.2 Parts
 - 3.2.1 Head
 - 3.2.2 Body
 - 3.2.3 Tail
4. Microscopic device of the liver, gallbladder and pancreas.
 - 4.1 Microscopic slides

- 4.1.1 Liver – staining H-E
- 4.1.2 Pancreas – staining H-E
- 4.1.3 Gallbladder
- 5. Electronograms.
 - 5.1 Hepatocyte / vassal pole /
 - 5.2 Hepatocyte (biliary pole)

PRACTICAL LESSON № 18 – 2 HOURS

URINARY SYSTEM. KIDNEY

- 1. Macroscopic structure of the kidney.
 - 1.1 Location
 - 1.2 Parts - morphological description
 - 1.2.1 Anterior and posterior surface
 - 1.2.2 Medial and lateral margin
 - 1.2.3 Superior and inferior extremity
 - 1.2.4 Hilum of the kidney
 - 1.3 Sheaths and attachment.
- 2. Microscopic structure.
 - 2.1 Microscopic slides
 - 2.1.1 Kidney - staining H-E
 - 2.1.2 Kidney -. Staining- Congo red
- 3. Electronograms.
 - 3.1 Haemato-urinary barrier

PRACTICAL LESSON № 19 – 2 HOURS

URINARY SYSTEM. URINARY TRACT

- 1. Macroscopic structure of minor, major calyces and renal pelvis.
 - 1.1 Location
 - 1.2 Morphological description.
- 2. Macroscopic structure of the ureter.
 - 2.1 Location
 - 2.2 Parts
- 3. Macroscopic structure of the bladder.
 - 3.1 Location
 - 3.2 Morphological description
- 4. Microscopic structure.
 - 4.1 Microscopic slides
 - 4.1.1 Ureter - staining H-E
 - 4.1.2 Bladder - staining H-E
 - 4.1.3 Urethra - staining H-E

PRACTICAL LESSON № 20 – 2 HOURS

ENDOCRINE SYSTEM. HYPOPHYSIS, EPIPHYSIS AND LANGERHANS ISLANDS

- 1. Macroscopic structure of the pituitary and pineal glands.

- 1.1 Location
- 1.2 Parts - morphological description
- 2. Microscopic structure.
 - 2.1 Microscopic slides
 - 2.1.1 Pituitary gland - staining H-E
 - 2.1.2 Epiphysis - staining H-E
 - 2.1.3 Langerhans Islands - staining H-E
 - 2.1.4 Langerhans Islands - staining Gremelius

PRACTICAL LESSON № 21 – 2 HOURS

TEST. PRACTICAL EXAM

PRACTICAL LESSON № 22 – 2 HOURS

ENDOCRINE SYSTEM. Thyroid, parathyroid and adrenal glands

- 1. Macroscopic structure of the thyroid gland.
 - 1.1 Location
 - 1.2 Parts - morphological description
 - 1.2.1 Lobes and isthmus
- 2. Macroscopic device of the parathyroid glands.
 - 2.1 Location
- 3. Macroscopic structure of the adrenal gland.
 - 3.1 Location
 - 3.2 Anterior and posterior surface
 - 3.3 Medial and lateral margin
 - 3.4 Hilum
- 4. Microscopic structure of the thyroid, parathyroid and adrenal glands.
 - 4.1 Microscopic slides
 - 4.1.1 Thyroid gland - staining H-E
 - 4.1.2 Parathyroid glands - staining H-E
 - 4.1.3 Adrenal gland - staining H-E
- 5. Electronograms.
 - 5.1 Adrenocorticocyte

PRACTICAL LESSON № 23 – 2 HOURS

MALE REPRODUCTIVE SYSTEM. TESTIS AND EPIDIDYMIS

- 1. Macroscopic device of the testis.
 - 1.1. Location
 - 1.2. Parts - morphological description
 - 1.2.1. Superior and inferior extremity
 - 1.2.2. Medial and lateral surface
 - 1.2.3. Anterior and posterior margin
- 2. Macroscopic structure of the epididymis.
 - 2.1. Location
 - 2.2 Parts - morphological description

- 2.2.1. Head
- 2.2.2. Body
- 2.2.3 Tail
- 3. Microscopic structure of the testis and epididymis.
 - 3.1 Microscopic slides
 - 3.1.1 Testis - staining H-E
 - 3.1.2 Epididymis - staining H-E
- 4. Electronograms.
 - 4.1 Leydig cells of the human testis

PRACTICAL LESSON № 24 – 2 HOURS

MALE REPRODUCTIVE SYSTEM. PROSTATE, DUCTUS DEFERENS, SEMINAL VESICLES AND BULBOURETHRAL GLANDS.

- 1. Macroscopic structure of the prostate.
 - 1.1 Location
 - 1.2 Parts - morphological description
 - 1.2.1 Base and apex
 - 1.2.2. Posterior, anterior and inferior lateral surfaces
- 2. Macroscopic structure of the ductus deferens.
 - 2.1 Location
 - 2.2 Parts - morphological description
 - 2.2.1. Testicular part
 - 2.2.2. Funicular part
 - 2.2.3. Inguinal part
 - 2.2.4. Pelvic part
- 3. Macroscopic structure of seminal vesicles.
 - 3.1. Location
 - 3.2. Parts - morphological description
- 4. Macroscopic device of bulbourethral glands.
 - 4.1. Location
- 5. Microscopic structure of the prostate, seminal vesicles, ductus deferens and bulbourethral glands.
 - 5.1 Microscopic slides
 - 5.1.1 Prostate - staining H-E
 - 5.1.2 Ductus deferens - staining H-E

PRACTICAL LESSON № 25 – 2 HOURS

MALE REPRODUCTIVE SYSTEM. EXTERNAL REPRODUCTIVE ORGANS.

- 1. Macroscopic structure of the penis.
 - 1.1 Parts - morphological description
 - 1.2.1 Radix, body and head
 - 1.2.2. Cavernous bodies
 - 1.2.3 Spongy body
- 2. Microscopic structure of the penis.

- 2.1 Microscopic slides
 - 2.1.1 Penis – staining H-E

PRACTICAL LESSON № 26 – 2 HOURS

FEMALE REPRODUCTIVE SYSTEM. OVARIUM

- 1. Macroscopic structure of the ovary.
 - 1.1 Location
 - 1.2 Parts - morphological description
 - 1.2.1 Two ends - tubal and uterine
 - 1.2.2 Medial and lateral surfaces
 - 1.2.3 Front and rear edge
- 2. Microscopic structure of the ovary.
 - 2.1 Microscopic slides
 - 2.1.1 Ovary – staining H-E

PRACTICAL LESSON № 27 – 2 HOURS

FEMALE REPRODUCTIVE SYSTEM. UTERUS AND UTERINE TUBES

- 1. Macroscopic structure of the uterus.
 - 1.1. Location
 - 1.2. Parts - morphological description
 - 1.2.1. Body
 - 1.2.2. Cervix
 - 1.2.3. Isthmus
- 2. Macroscopic structure of fallopian tubes.
 - 2.1. Location
 - 2.2. Parts - morphological description
 - 2.2.1. Uterine part
 - 2.2.2. Isthmus
 - 2.2.3. Ampulla
 - 2.2.4. Infundibulum
- 3. Macroscopic structure of the vagina.
 - 3.1. Parts - morphological description
 - 3.1.1. Anterior and posterior wall
 - 3.1.2. Fornix
 - 3.1.3. Vaginal opening
- 4. Microscopic structure.
 - 4.1 Microscopic slides
 - 4.1.1 Uterine wall - staining H-E
 - 4.1.2 Uterine tube – staining H-E
 - 4.1.3 Vagina - staining H-E

PRACTICAL LESSON № 28 – 2 HOURS

FEMALE REPRODUCTIVE SYSTEM. EXTERNAL GENITALIA.

- 1. Macroscopic structure.

- 1.1. Mons pubis
- 1.2. Major labia
- 1.3. Minor labia
- 1.4. Vaginal vestibule
- 1.5. Hymen
- 1.6. Vestibular glands and bulbus
- 1.7. Clitoris

PRACTICAL LESSON № 29 – 2 HOURS

TEST. PRACTICAL EXAM

MALE AND FEMALE REPRODUCTIVE SYSTEM. ENDOCRINE SYSTEM.

PRACTICAL LESSON № 30 – 2 HOURS

NON-HAIRY AND HAIRY SKIN

1. Skin structure.
 - 1.1 Epidermis
 - 1.2 Derma
 - 1.3 Sweat glands
 - 1.3.1 Merocrine
 - 1.3.2 Apocrine
 - 1.4 Hair
 - 1.5 Sebaceous glands
 - 1.6 Nails

FOURTH SEMESTER.

TOPOGRAPHY

PRACTICAL LESSON № 1 – 2 HOURS

INTRODUCTION TO CADAVER DISSECTION. BACK. SUBCUTANEOUS ELEMENTS. SURFACE MUSCLES

1. Introduction to cadaver dissection.
2. Back.
 - 2.1. Areas
 - 2.2. Subcutaneous elements
 - 2.3. Superficial muscles
 - 2.3.1. Insertions
 - 2.3.2. Function
 - 2.3.3. Innervation

PRACTICAL lesson № 2 – 2 hours

BACK. DEEP MUSCLES

1. Deep muscles.

- 1.1. Insertions
- 1.2. Function
- 1.3. Innervation

PRACTICAL LESSON № 3 – 2 HOURS

NECK. REGIONS. SUPERFICIAL ELEMENTS.

1. Neck. Boundaries.
2. Regions of the neck.
3. Subcutaneous elements of the neck.
 - 3.1. M. platysma
 - 3.2. V. jugularis anterior, v. jugularis externa
 - 3.3. Cutaneous branches of the cervical plexus

PRACTICAL LESSON № 4 – 2 HOURS

CERVICAL FACIA. CERVICAL FACIAL FORMATIONS. LATERAL REGION OF THE NECK.

1. Cervical fascia.
 - 1.1 Surface sheath.
 - 1.2 Pretracheal sheath.
 - 1.3 Prevertebral sheath.
2. Lateral neck area.
 - 2.1. Boundaries.
 - 2.2. Content.
 - 2.2.1. Muscles
 - 2.2.2. Vessels
 - 2.2.3. Nerves
 - 2.2.4. Lymph nodes

PRACTICAL LESSON № 5 – 2 HOURS

CAROTID TRIANGLE. STERNOCLEIDOMASTOID REGION

1. Trogonum caroticum.
 - 1.1. Boundaries
 - 1.2. Layered topography
 - 1.3. Content
 - 1.3.1. Muscles
 - 1.3.2. Vessels
 - 1.3.3. Nerves
 - 1.3.4. Lymph nodes
2. Regio sternocleidomastoidea.
 - 2.1. Boundaries
 - 2.2. Layered topography
 - 2.3. Content

PRACTICAL LESSON № 6 – 2 HOURS

SUBMANDIBULAR TRIANGLE. INFRAHYOID REGION.

1. Submandibular Triangle
 - 1.1. Boundaries
 - 1.2. Layered topography
 - 1.3. Muscles
 - 1.4. Vessels
 - 1.5. Nerves
 - 1.6. Lymph nodes
 - 1.7. Submandibular gland
2. Infrahyoid region.
 - 2.1. Boundaries
 - 2.2 Content
 - 2.2.1 Organs
 - 2.2.2 Muscles
 - 2.2.3 Vessels
 - 2.2.4 Nerves
 - 2.2.5 Lymph nodes

PRACTICAL LESSON № 7 – 2 HOURS

ROOT OF THE NECK.

1. Root of the neck.
 - 1.1. Spatium antescalenum
 - 1.2. Spatium interscalenum
 - 1.3. Trigonum scalenovertbrale
 - 1.4. Pleural cupula
 - 1.5. A. subclavia
 - 1.5.1. Branches
 - 1.6. V. subclavia
 - 1.7. Lymph vessels and lymph nodes
 - 1.8. Nerves

PRACTICAL LESSON № 8 – 2 HOURS

FOSSA AXILLARIS.

1. Walls of the fossa axillaris
2. Content
 - 2.1 Vessels
 - 2.2 Nerves
 - 2.3 Lymph nodes

PRACTICAL LESSON № 9 – 2 HOURS

TEST. PRACTICAL EXAM

PRACTICAL LESSON № 10 – 2 HOURS

THORAX. REGIONS AND SUBCUTANEOUS ELEMENTS. THORACIC CAVITY.

1. Thorax. Regions.
2. Subcutaneous elements of the chest.

- 2.1. The mammary gland
- 2.2. Vessels
- 2.3. Nerves
- 2.4. Fascia pectoralis
- 3. Thoracic cavity
 - 3.1. Structures forming the thoracic cavity.
 - 3.2. Projections of the pleura and lungs on the chest wall.
 - 3.3. Projections of the heart on the chest wall.
 - 3.4. A. thoracica interna.
 - 3.4.1. Branches

PRACTICAL lesson № 11 – 2 hours

MEDIASTINUM MEDIUS. ROOT OF THE LUNGS

- 1. Superior mediastinum.
 - 1.1 Boundaries.
 - 1.2 Contents.
- 2. Lung root.

PRACTICAL LESSON № 12 – 2 HOURS

ANTERIOR AND MEDIASTINUM MEDIUS.

- 1. Anterior mediastinum.
 - 1.1. Boundaries
 - 1.2. Contents
- 2. Middle mediastinum.
 - 2.1. Boundaries
 - 2.2. Content

PRACTICAL LESSON № 13 – 2 HOURS

POSTERIOR MEDIASTINUM. INTERCOSTAL SPACES AND CHEST DIAPHRAGM.

- 1. Posterior mediastinum.
 - 1.1 Boundaries
 - 1.2 Content
- 2. Intercostal spaces.
 - 2.1 Muscles
 - 2.2 Vessels
 - 2.3 Nerves
- 3. Chest diaphragm.
 - 3.1 Parts
 - 3.2 Function

PRACTICAL LESSON № 14 – 2 HOURS

ABDOMINAL REGION - BORDERS AND DIVISION. LAYERED TOPOGRAPHY OF THE ANTERIOR ABDOMINAL WALL.

1. Abdomen. Regions.
2. Subcutaneous elements of abdomen.
 - 2.1. Layered topography
 - 2.2. Vessels
 - 2.3. Nerves

PRACTICAL LESSON № 15 – 2 HOURS

MUSCLES, VESSELS AND NERVES OF THE ANTERIOR-LATERAL ABDOMINAL WALL. INGUINAL CANAL. M. RECTUS ABDOMINIS AND ITS VAGINA. ANATOMY OF THE POSTERIOR SURFACE OF ANTERIOR ABDOMINAL WALL.

1. The abdominal wall.
 - 1.1 Muscles
 - 1.2 Vessels
 - 1.3 Nerves
2. Inguinal canal.
 - 2.1 Walls
 - 2.2 Content in men and women
3. M. rectus abdominis.

PRACTICAL LESSON № 16 – 2 HOURS

ABDOMINAL CAVITY. COMPARTMENTS. PERITONEUM. PERITONEAL CAVITY.

1. Abdominal cavity.
 - 1.1 Compartments.
2. Peritoneum.
 - 2.1 Parietal peritoneum.
 - 2.2 Visceral peritoneum.
3. Peritoneal cavity.
 - 3.1 Supracolic compartment. Boundaries.
 - 3.2 Infracolic compartment. Boundaries.
 - 3.3 Pelvic compartment. Boundaries.

PRACTICAL LESSON № 17 – 2 HOURS

SUPRACOLIC COMPARTMENT OF THE PERITONEAL CAVITY - ORGANS, PERITONEAL FORMATIONS AND SPACES. BURSA OMENTALIS

1. Boundaries.
2. Peritoneal formations and spaces.
3. Organs.
4. Bursa omentalis.

PRACTICAL LESSON № 18 – 2 HOURS

TEST. PRACTICAL EXAM

PRACTICAL LESSON № 19 – 2 HOURS

LOWER DEPARTMENT OF THE PERITONEAL CAVITY - ORGANS, PERITONEAL FORMATIONS AND SPACES.

1. Boundaries.
2. Peritoneal formations and spaces.
3. Organs.

PRACTICAL LESSON № 20 – 2 HOURS

NERVES AND VESSELS OF CELIAC TRUNK. PORTAL VEIN.

1. Truncus celiacus.
 - 1.1. Branches.
2. V. portae
 - 2.1. Formation and tributaries
3. Lymph nodes
4. Nerves

PRACTICAL LESSON № 21 – 2 HOURS

NERVES, VESSELS OF A. MESENTERICA SUPERIOR AND A. MESENTERICA INFERIOR

1. A. mesenterica superior
 - 1.1. Branches
2. V. mesenterica superior.
 - 2.1 Formation and tributaries
3. Lymph nodes
4. Nerves
 - 4.1. Plexus mesentericus superior
5. A. mesenterica inferior
 - 5.1. Branches

PRACTICAL LESSON № 22 – 2 hours

RETROPERITONEUM. PRIMARY AND SECONDARY RETROPERITONEAL ORGANS. VESSELS AND NERVES.

1. Retroperitoneum.
 - 1.1 Boundaries
2. Secondary retroperitoneal organs.
 - 2.1 Duodenum
 - 2.2 Pancreas
3. Primary retroperitoneal organs.
 - 3.1 Kidney
 - 3.2 Suprarenal glands
 - 3.3 Ureter
4. Abdominal aorta.
 - 4.1 Branches

5. Inferior vena cava.
 - 5.1 Formation and tributaries
6. Lymphatic vessels and lymph nodes.
7. Nerves.
 - 7.1 Somatic
 - 7.2 Vegetative

PRACTICAL LESSON № 23 – 2 hours

PELVIS. PERITONEAL, SUBPERITONEAL AND SUBCUTANEOUS REGIONS. ISCHIOANAL FOSSA (FOSSA ISCHIOANALIS).

1. Pelvic cavity.
 - 1.1 Structures enclosing the peritoneal cavity
2. Peritoneal compartment of the pelvic cavity.
 - 2.1 Organs
 - 2.2 Spaces
3. Subperitoneal compartment of the pelvis.
 - 3.1 Organs
 - 3.2 Spaces
4. Subcutaneous region of the pelvis.
 - 4.1 Pelvic diaphragm
 - 4.2 Urogenital diaphragm
5. Ischioanal fossa.

PRACTICAL LESSON № 24 – 2 hours

VESSELS AND NERVES OF THE PELVIS.

1. Vessels in the pelvic cavity.
2. Nerves.
 - 2.1 Somatic
 - 2.2 Visceral

PRACTICAL LESSON № 25 – 2 hours

HEAD. MUSCLES OF FACIAL EXPRESSION. VESSELS AND NERVES OF THE FACE. TEMPOROMANDIBULAR JOINT. MUSCLES OF MASTICATION. PAROTIDEOMASSETERIC REGION.

1. Muscles of facial expression.
2. Vessels and nerves of the face.
3. Temporomandibular joint.
 - 3.1 Structure
 - 3.2 Biomechanics
4. Muscles of mastication.
5. Parotideomasseteric region.
 - 5.1 Boundaries
 - 5.2 Content

PRACTICAL LESSON № 26 – 2 hours

**HEAD. FRONTO Parietooccipital REGION (EPICRANIAL REGION).
TEMPORAL REGION. INFRATEMPORAL REGION.**

1. Frontoparietooccipital (epicranial) region.
 - 1.1 Boundaries
 - 1.2 Content
2. Temporal region.
 - 2.1 Boundaries
 - 2.2 Content
3. Infratemporal region.
 - 3.1 Boundaries
 - 3.2 Content

PRACTICAL LESSON № 27 – 2 hours

PRESENTATION OF A TOPOGRAPHIC REGION BY EACH STUDENT.

PRACTICAL LESSON № 28 – 2 hours

TEST. PRACTICAL EXAM.

PRACTICAL LESSON № 29 – 2 hours

PERIPHARYNGEAL SPACE.

1. Retropharyngeal space.
2. Lateropharyngeal space.

PRACTICAL LESSON № 30 – 2 hours

COMPLETION OF THE DISSECTIONS.

RECOMMEND RESOURCES FOR STUDY

Textbooks

1. Central Nervous System. Vankov's Anatomy, M. Vankova. STENO publ.house, Varna, 2015.
2. Gray's Anatomy for Students, Elsevier; 4th edition, 2019.
3. Stevens, Lowe, Human Histology, 2nd edition, Chapman and Hall, 1997.
4. Sobotta Anatomy Textbook: English Edition with Latin Nomenclature. Jens Waschke, Tobias M. Böckers, Friederich Paulsen eds., 1st edition, Urban & Fischer, 2019. <https://www.elsevier.com/books/sobotta-anatomy-textbook/paulsen/978-0-7020-6760-0>.
5. High-Yield Neuroanatomy (High-Yield Series) by James D. Fix (Sep 2, 2008).
6. Functional Neuroanatomy: Text and Atlas, 2nd Edition (LANGE Basic Science) by Adel Afifi and Ronald Bergman (Jan 28, 2005).
7. Chaurasia BD. Human anatomy. Regional and applied. Third edition. CBS Publishers & distributors. New Delhi, India, 1998.

8. Romanes GJ. Cunningham's manual of practical anatomy. Thorax and abdomen. Oxford University Press. New York, 1996.
9. Patrick W. Tank. Grant's Dissector (Tank, Grant's Dissector). 14th Edition. Lippincott Williams & Wilkins, 2008.
10. Basic Histology, I.C. Janqueira
11. Clinical and Functional Histology for Medical Students, Richard S. Snell
12. Histology, R. Henrikson
13. Histology – A Text and Atlas, M. Ross, Sixth edition
14. Human embryology, Inderbir Singh, Sixth edition
15. Fundamentals of Anatomy and Physiology for nursing and Healthcare students, edited by Ian Peate and Muralitharan Nair, Wiley Blackwell, 2017.
16. B. Kitov, T. Karamanlieva, T. Kitova, N. Traykova, I. Kehayov, D. Milkov, Clinical neuroanatomy, Lax Book, Plovdiv, 2017.

Atlases

1. Sobotta. Atlas of Human anatomy, 15th edition, Urban & Fisher, 2011
2. Drake R, Wayne Vogl A., Mitchell A, Gray's Atlas of Anatomy, 2e, 2015, Churchill Livingstone.
3. Krstic, Human Microscopic Anatomy, Springer, 1997.
4. Delchev S., Novakov S., Ivanova R. Photographic atlas of human anatomy, ed. S.Sivkov, Lax book, 2019, Plovdiv.
5. Delchev S., Novakov S., Ivanova R. Photographic atlas of human anatomy, bilingual edition, ed. S.Sivkov, Lax book, 2016, Plovdiv.

Handbooks

1. MCQs in anatomy. A self-testing supplement to human anatomy. Locomotory & Central Nervous System. S.T. Sivkov, S.S. Novakov. 2012.
2. Atanassova P, Koeva I, Petrova E, Penkova N, Trichkova V. A Practicum of Organ Histology with CD – Interactive atlas of anatomy and histology of internal organs, edition of the Department of anatomy, histology and embryology, Medical University of Plovdiv.
3. S. Novakov, Y. Koeva, A. Fusova, F. Popova. MCQs in anatomy, a self-testing supplement to human anatomy - All Systems (For Dental Students), Med Publ House "Lax Book", Plovdiv, 2014.
4. P. Atanassova, Y.Koeva, E.Petrova, N.Penkova, V.Trichkova. A practicum for laboratory exercises in histology and embryology - part I., Plovdiv. ISBN- I 954-9806-30-8
5. P. Atanassova, Y.Koeva, E.Petrova, N.Penkova, V.Trichkova. A practicum for laboratory exercises in histology and embryology - part II, Plovdiv. ISBN-II 954-9806-31-6
6. Yveta Koeva, Pepa Atanassova, Elisaveta Petrova, Nadja Penkova, Valentina Trichkova Handbook in Cytology, Histology and Embryology, Ed. Y. Koeva, Plovdiv PH VAP, 2011, ISBN 978-954-8326-33-9
7. S.T.Sivkov, P.K. Atanasova, S.S. Novakov. MCQ's in Anatomy. A self-testing supplement to human anatomy. Internal organs and topographic anatomy. Medical Publishing House "VAP", Plovdiv, Publishing House "Makros", Plovdiv. 2013. ISBN 978-954-702-986.

FINAL EXAM SUMMARY IN ANATOMY AND HISTOLOGY FOR MEDICAL STUDENTS FIRST YEAR

I. LOCOMOTORY SYSTEM

1. Bone as an organ. Types of bones – description, structure – compact and spongy bone tissue. Periosteum – structure. Skeleton – definition, function.
2. Articulations between bones – general data. Continuous articulations (synarthroses) - types.
3. Joints (diarthroses) - structure: basic and additional elements. Biomechanics. Classification of the synovial joints.
4. Joints of the vertebral column. Biomechanics.
5. Joints of the thorax. The thorax as a whole. Biomechanics.
6. Joints between the vertebral column and the skull - biomechanics.
7. Types of articulations between the bones of the skull. Temporomandibular joint.
8. Joints of the shoulder girdle. Shoulder joint.
9. Elbow joint. Articulations between the bones of the forearm.
10. Joints of the wrist. Carpometacarpal joints. Metacarpophalangeal joints. Interphalangeal joints.
11. Articulations between the bones of the pelvic girdle. The pelvis as a whole. Biomechanics. Dimensions of the female pelvis.
12. Hip joint.
13. Knee joint.
14. Articulations between the bones of the foreleg. Talocrural (ankle) joint.
15. Joints of the foot – subtalar and talocalcaneonavicular joints. Joints of the foot with limited movements. Interphalangeal joints. Biomechanics.
16. Foot as a whole.
17. Muscle as an organ: structure, auxiliary structures, classification of the muscles, biomechanics.
18. Muscles of the shoulder girdle – groups. Proper muscles (scapular muscles) of the shoulder girdle – attachments, action and nerve supply.
19. Muscles of the upper arm – groups, attachments, action and nerve supply.
20. Muscles of the forearm - groups, attachments, action and nerve supply.
21. Muscles of the hand - groups, attachments, action and nerve supply.
22. Fasciae and tendinous sheaths (vaginas) of the upper extremity.
23. Fasciae of the hand.
24. Muscles of the pelvic girdle.
25. Muscles of the thigh - groups, attachments, action and nerve supply.
26. Muscles of the (fore)leg - groups, attachments, action and nerve supply.
27. Muscles of the foot - groups, attachments, action and nerve supply.
28. Fasciae and tendinous sheaths (vaginas) of the lower extremity.
29. Topography of the upper limb – medial (triangular) and lateral (quadrangular) axillary foramina (spaces), humeromuscular canal, cubital fossa.
30. Topography of the lower limb – suprapiriform foramen, infrapiriform foramen, vascular lacuna, muscular lacuna, obturator canal, femoral canal.
31. Topography of the lower limb. Femoral triangle, adductor canal, popliteal fossa, cruropopliteal canal, superior musculoperoneal canal, inferior musculoperoneal canal.
32. Superficial veins of the upper and lower limbs.

33. Axillary and brachial arteries – position, parts, branches. Anastomoses around the shoulder joint.
34. Radial and ulnar arteries – position, branches, anastomoses.
35. External and internal iliac arteries. Position, branches, anastomoses.
36. Femoral and popliteal arteries - position, branches.
37. Arteries of the (fore)leg and foot - position, branches, anastomoses.
38. Brachial plexus. Formation, position, branches.
39. Median and ulnar nerves. Origin, position, branches. Areas of sensory and motor innervation.
40. Radial, axillary and musculocutaneous nerves. Origin, position, branches. Areas of sensory and motor innervation.
41. Lumbar plexus. Formation, position, branches.
42. Sacral plexus. Formation, position, branches.

II. NERVOUS SYSTEM AND SENSORY ORGANS

1. Skull (cranium) - facial cranium and neurocranium (cranial skull). Calvaria (calva, vault). The skull of the newborn.
2. External surface of the base of the skull - elements, passing through the openings and canals.
3. Internal surface of the base of the skull - elements, passing through the openings and canals.
4. Fossae on the lateral surface of the skull.
5. Orbit – formation, communications and elements, passing through them.
6. Bony skeleton of the nasal cavity - formation, communications and elements, passing through them.
7. Definition of the nervous system. Division. General principles in the structure and organization of the nervous system.
8. General principles in the functioning of the nervous system.
9. Ontogenetic and phylogenetic development of the nervous system.
10. Spinal cord - position, shape, size, segments. Blood supply. Meninges of the spinal cord.
11. Spinal cord - grey matter, description, neuronal composition.
12. Spinal cord – white matter - ascending (sensory) and descending (motor) tracts. Proper fasciculi.
13. Brain – embryonic development, shape, size. Anatomical and ontogenetic division. Brainstem - parts, old and new formations.
14. Reticular formation.
15. Medulla oblongata – external view (aspect).
16. Medulla oblongata – internal structure – grey matter.
17. Medulla oblongata – internal structure – white matter.
18. Pons – description, basal part – external view and internal structure.
19. Pons – dorsal part – description, internal structure.
20. Cerebellum – description, external view (aspect).
21. Cerebellum – cerebellar cortex.
22. Cerebellum – nuclei and white matter.
23. Fourth ventricle. Rhomboid fossa. Cerebrospinal fluid – formation and circulation.
24. Midbrain – external view.
25. Midbrain – internal structure – peduncles of the midbrain, tectum.
26. Midbrain – internal structure – tegmentum.

27. Diencephalon – dorsal thalamus.
28. Metathalamus, epithalamus. Third ventricle.
29. Diencephalon – ventral thalamus.
30. Diencephalon - hypothalamus.
31. Cerebrum (forebrain) – description, embryonic development. Exterior of the hemispheres – sulci and gyri.
32. Cerebral cortex. Cytoarchitectonics and myeloarchitectonics. Isocortex and allocortex.
33. Cortical areas. Localization of the functions in the cortex.
34. Basal nuclei of the cerebrum.
35. White matter of the cerebral hemispheres.
36. Rhinencephalon. Olfactory sensory system. Olfactory nerves.
37. Limbic system – limbic cortex.
38. Limbic system – limbic nuclei and limbic pathways.
39. Lateral ventricle. Ventricular system.
40. Meninges of the brain – dura mater.
41. Meninges of the brain – arachnoidea mater and pia mater.
42. Blood supply of the brain.
43. Ascending pathways for general sensation. Sensory system for superficial tactile reception (mechanoreception).
44. Ascending pathways for general sensation. Sensory system for pain and temperature.
45. Ascending pathways for general sensation. Proprioceptive sensory pathways. Interoceptive pathways.
46. Visual pathway.
47. Auditory and vestibular pathways.
48. Motor pathways. Pyramid system.
49. Motor pathways. Extrapyramidal system.
50. Neuro-endocrine conducting system. Central transmitter system.
51. Peripheral nervous system - composition. Cranial nerves – general characteristics.
52. Third, fourth, and sixth cranial nerves – nuclei, position, characteristics. Course of the nerves, branches, area of distribution.
53. Trigeminal nerve. Nuclei - position, characteristic. Ganglion of the nerve. The first branch of the nerve - course, branches, area of distribution.
54. Trigeminal nerve. Nuclei - position, characteristic. Ganglion of the nerve. The second branch of the nerve - course, branches, area of distribution.
55. Trigeminal nerve. Nuclei - position, characteristic. Ganglion of the nerve. The third branch of the nerve - course, branches, area of distribution.
56. Facial nerve. Nuclei - position, characteristic. Course, branches, area of distribution.
57. Glossopharyngeal nerve. Nuclei - position, characteristic. Course, branches, area of distribution.
58. Vagus nerve. Nuclei - position, characteristic. Course, branches, area of distribution.
59. Accessory nerve, hypoglossal nerve. Nuclei - position, characteristic. Course of the nerves, branches, area of distribution.
60. Spinal nerves - number, groups, formation. Functional characteristics of the spinal nerves. Spinal ganglion. Dorsal branches of the spinal nerves.

61. Autonomic nervous system - definition, criteria for division into sympathetic and parasympathetic divisions. Reflex arch. Neuronal composition. Autonomic ganglia. Differences between the autonomic and somatic nervous systems.
62. Sympathetic division of the autonomic nervous system - nuclei, sympathetic trunk, prevertebral ganglia, nerves.
63. Parasympathetic division of the autonomic nervous system. Cranial and sacral parasympathetic outflow - nuclei, ganglia, nerves.
64. Plexuses of the autonomic nervous system in the thorax, abdominal and pelvic cavities - formation, position, organs supplied by the plexuses.
65. Organ of taste. Gustatory sensory system (pathway).
66. Organ of vision - general remarks. Eyeball - shape, position, size. Outer (fibrous) coat of the eyeball - general overview, ontogenesis.
67. Eyeball - middle (vascular) coat - parts, description.
68. Internal coat of the eyeball (retina). Optic nerve.
69. Internal nucleus (refracting media) of the eye.
70. Accessory organs of the eye – extraocular muscles.
71. Accessory organs of the eye – eyebrows, eyelids, conjunctiva. Lacrimal apparatus.
72. Organ of hearing and equilibrium – general characteristics, ontogenesis. External ear.
73. Middle ear.
74. Internal ear – bony labyrinth.
75. Internal ear - membranous labyrinth - cochlear part. Organ of Corti. Cochlear nerve.
76. Internal ear - membranous labyrinth - vestibular part. Organ of equilibrium. Vestibular nerve.

FINAL EXAM SUMMARY IN ANATOMY AND HISTOLOGY FOR MEDICAL STUDENTS SECOND YEAR

I. INTERNAL ORGANS

1. Cardio-vascular system. Definition and components. General microscopic, ultramicroscopic and functional characteristics of its organs. Greater (systematic) circulation. Lesser (pulmonary) circulation. Embryonic development of the main blood vessels. Fetal circulation.
2. Heart. Embryonic development. Shape, size, position. Surface projections of the heart on the thoracic wall.
3. Cardiac atria and ventricles. Valve apparatus. Pericardium. Blood and nerve supply of the heart.
4. Heart – microscopic, ultramicroscopic and functional characteristics of the cardiac wall and valves. Fibrous skeleton. Impulse-conducting system of the heart.
5. Arteries. Microscopic, ultramicroscopic and functional characteristics of the arterial wall. Division of the arteries according to their caliber and tissue structure.
6. Aorta. Microscopic and ultramicroscopic characteristics of the wall. Position and division. Ascending aorta, aortic arch, thoracic aorta – branches.
7. Veins. Microscopic, ultramicroscopic and functional characteristics of the venous wall. Division of the veins according to their caliber and tissue structure. Venous valves.

8. Microcirculatory blood system. Arterioles, venules, capillaries - types. Microscopic, ultramicroscopic and functional characteristics. Arteriovenous anastomoses.
9. Lymphatic system. Definition and components. Thoracic duct, right lymphatic duct and tributaries. Lymph capillaries – microstructure of the wall. Circulation of the lymph.
10. Lymph nodes. Function. Groups. Microscopic and ultramicroscopic characteristics.
11. Immune (hemopoietic) system. Definition and classification. General microscopic, ultramicroscopic and functional characteristics of its organs. Bone marrow. Macroscopic and microscopic characteristics.
12. Thymus. Macroscopic and microscopic characteristics. Blood-thymus barrier. Blood and nerve supply. Tonsils – general structure.
13. Spleen. Macroscopic and microscopic characteristics. Blood and nerve supply.
14. Digestive system. Constituent organs. General structure of the tubular and parenchymal organs in the system.
15. Oral cavity. Embryonic development. Oral vestibule, lips, cheeks, gums. Macroscopic and microscopic characteristics. Blood and nerve supply.
16. Oral cavity – proper oral cavity. Hard and soft palate, oral diaphragm, oropharyngeal isthmus. Macroscopic and microscopic characteristics. Blood and nerve supply.
17. Teeth. Macroscopic characteristics of the teeth. Groups. Deciduous and permanent dentition – characteristics, eruption of the teeth. Distinctive features of the human dentition.
18. Teeth. Embryonic development. Microscopic, ultramicroscopic and functional characteristics of the cuticle, enamel and dentin.
19. Teeth. Macroscopic, microscopic, ultramicroscopic and functional characteristics of the cement, pulp, periodontium and paradontium. Blood and nerve supply.
20. Tongue. Embryonic development. Macroscopic, microscopic, ultramicroscopic and functional characteristics. Lingual papillae - types. Muscles of the tongue. Blood and nerve supply.
21. Salivary glands – groups. Parotid gland. Macroscopic, microscopic, ultramicroscopic and functional characteristics. Blood and nerve supply.
22. Submandibular and sublingual glands. Macroscopic, microscopic, ultramicroscopic and functional characteristics. Blood and nerve supply.
23. Pharynx. Macroscopic, microscopic, ultramicroscopic and functional characteristics. Blood and nerve supply.
24. Esophagus. Embryonic development. Macroscopic, microscopic, ultramicroscopic and functional characteristics. Blood and nerve supply.
25. Stomach. Embryonic development. Macroscopic characteristics of the stomach.
26. Stomach. Microscopic, ultramicroscopic and functional characteristics. Blood and nerve supply.
27. Small intestine Embryonic development. Parts. Duodenum. Macroscopic, microscopic, ultramicroscopic and functional characteristics. Blood and nerve supply.
28. Small intestine. Embryonic development. Jejunum and ileum. Macroscopic, microscopic, ultramicroscopic and functional characteristics. Blood and nerve supply.
29. Large intestine. Embryonic development. Parts. Cecum and colon. Vermiform appendix. Macroscopic, microscopic, ultramicroscopic and functional characteristics. Blood and nerve supply.
30. Rectum. Macroscopic, microscopic, ultramicroscopic and functional characteristics. Blood and nerve supply.
31. Pancreas. Embryonic development. Macroscopic, microscopic, ultramicroscopic and functional characteristics of the exocrine and endocrine parts. Blood and nerve supply.

32. Liver. Embryonic development. Macroscopic characteristics.
33. Liver. Microscopic, ultramicroscopic and functional characteristics. Types of hepatic lobules, hepton. Blood and nerve supply.
34. Biliary apparatus – intra- and extrahepatic pathways. Gallbladder. Macroscopic, microscopic, ultramicroscopic and functional characteristics. Blood and nerve supply.
35. Respiratory system. Embryonic development. Constituent organs. General morphological structure of its organs.
36. Nose, nasal cavity and paranasal sinuses. Macroscopic characteristics. Respiratory and olfactory parts of the nasal mucosa - microscopic, ultramicroscopic and functional characteristics. Blood and nerve supply.
37. Larynx. Cartilaginous skeleton. Muscles of the larynx.
38. Laryngeal cavity. Vocal folds. Macroscopic, microscopic, ultramicroscopic and functional characteristics of the mucosa. Blood and nerve supply.
39. Trachea, bronchial tree. Macroscopic, microscopic, ultramicroscopic and functional characteristics. Blood and nerve supply.
40. Lungs. Embryonic development. Macroscopic, microscopic, ultramicroscopic and functional characteristics. Pneumon. Blood-air barrier. Blood and nerve supply.
41. Urinary system. Embryonic development. Kidney – macroscopic characteristics. Capsules of the kidney.
42. Renal substance. Macroscopic characteristics. Nephron. Microscopic, ultramicroscopic and functional characteristics. Filtration barrier (blood-urinary barrier). Juxtaglomerular apparatus. Mesangium. Blood and nerve supply.
43. Excretory pathways of the kidney – major and minor renal calyces, renal pelvis. Ureter and urinary bladder. Macroscopic, microscopic, ultramicroscopic and functional characteristics. Blood and nerve supply.
44. Endocrine system – definition and classification. Genral macro- and microscopic characteristics of its organs. Endocrine organoids in other non-endocrine organs.
45. Endocrine system. Hypothalamo-hypophiseal system. Hypophysis (pituitary gland) and epiphysis (pineal gland). Embryonic development. Macroscopic, microscopic, ultramicroscopic and functional characteristics. Blood and nerve supply.
46. Endocrine system. Thyroid and parathyroid glands. Embryonic development. Macroscopic, microscopic, ultramicroscopic and functional characteristics. Blood and nerve supply.
47. Endocrine system. Suprarenal gland. Embryonic development. Macroscopic, microscopic, ultramicroscopic and functional characteristics. Blood and nerve supply. APUD-system.
48. Male reproductive system. Constituent organs. Testis and epididymis. Embryonic development. Macroscopic, microscopic, ultramicroscopic and functional characteristics. Blood-testicular barrier. Blood and nerve supply.
49. Male reproductive system. Ductus deferens. Seminal vesicle. Prostate. Penis. Urethra. Macroscopic, microscopic, ultramicroscopic and functional characteristics. Blood and nerve supply.
50. Female reproductive system. Constituent organs. Ovary. Embryonic development. Macroscopic, microscopic, ultramicroscopic and functional characteristics. Blood and nerve supply.
51. Female reproductive system. Uterine tubes. Embryonic development. Macroscopic, microscopic, ultramicroscopic and functional characteristics. Blood and nerve supply.
52. Uterus. Macroscopic, microscopic, ultramicroscopic and functional characteristics of the uterine wall. Ovarian-menstrual cycle. Microscopic and functional characteristics of the four phases. Blood and nerve supply.

- 53. Female reproductive system. Vagina. External genital organs. Macroscopic, microscopic, ultramicroscopic and functional characteristics. Blood and nerve supply.
- 54. Integumentary system. Hairless skin – parts. Microscopic, ultramicroscopic and functional characteristics. Keratopoiesis.
- 55. Integumentary system. Hairy skin. Hairs, sweat glands, sebaceous glands, mammary glands, nails. Microscopic, ultramicroscopic and functional characteristics.

II. TOPOGRAPHIC ANATOMY

- 57. Head. Topographic regions. Blood supply, motor and sensory innervation (nerve supply) of the face and head.
- 58. Frontoparietooccipital region.
- 59. Parotidomasseteric region.
- 60. Temporal region. Buccal region.
- 61. Infratemporal region.
- 62. Peripharyngeal space.
- 63. Neck. Topographic regions. Subcutaneous elements in the neck, thorax and abdomen.
- 64. Fasciae and connective tissue spaces in the neck.
- 65. Submandibular triangle.
- 66. Carotid triangle.
- 67. Common carotid artery. External and internal carotid arteries. Position and branches of the external carotid artery in the region of the neck.
- 68. Infrahyoid region.
- 69. Lateral region of the neck.
- 70. Antescalene and interscalene spaces, scaleno-vertebral triangle.
- 71. Subclavian artery. Position, branches.
- 72. Back. Regions. Muscles of the back.
- 73. Thorax. Topographic regions. Thoracic wall – muscles, intercostal spaces. Surface (layered) topography.
- 74. Axillary fossa. Position, structure, contents.
- 75. Thoracic cavity. Pleura. Pleural cavity.
- 76. Thoracic diaphragm.
- 77. Mediastinum. Boundaries. Division. Superior mediastinum.
- 78. Mediastinum. Boundaries. Division. Anterior and middle mediastinum.
- 79. Mediastinum. Boundaries. Division. Posterior mediastinum.
- 80. Ascending aorta, aortic arch, thoracic aorta – branches.
- 81. Superior vena cava. Formation. Position, main tributaries. Cava-caval anastomoses.
- 82. Abdomen. Antero-lateral abdominal wall. Regions. Surface (layered) topography – fasciae, muscles. Vagina of the rectus abdominis.
- 83. Inguinal canal. Linea alba.
- 84. Abdominal cavity. Walls, compartments. Peritoneum – structure, blood and nerve supply. Peritoneal compartment of the abdominal cavity.
- 85. Superior (supracolic) compartment of the abdominal cavity. Organs, peritoneal formations, topographic relations of the organs, vessels and nerves.
- 86. Inferior (infracolic) compartment of the peritoneal cavity. Organs, peritoneal formations, topographic relations of the organs, vessels and nerves.
- 87. Lesser sac (omental bursa). Greater omentum – formation, parts.
- 88. Portal vein. Formation and position. Anastomoses with superior and inferior venae cavae.

89. Retroperitoneal compartment of the abdominal cavity.
90. Abdominal aorta – position, branches – groups, areas of distribution.
91. Inferior vena cava. Formation. Position, main tributaries. Cava-caval anastomoses.
92. Peritoneal compartment of the pelvic cavity. Organs, peritoneal formations. Topographic relations of the organs.
93. Subperitoneal compartment of the pelvic cavity. Organs, spaces, topographic relations of the organs, vessels and nerves. Subcutaneous region of the pelvis. Pelvic diaphragm, ischioanal fossa.

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