

ANNOTATION
work program of the discipline

"Histology, embryology, cytology"

Speciality	05/31/01 General medicine
Number of credits	8
Interim certification form (test/test with assessment/exam)	Test/exam

1. The purpose of studying the discipline

The purpose of mastering the academic discipline "Histology, Embryology, Cytology" is to form in students scientific ideas about microscopic functional morphology and the development of cellular, tissue and organ systems of the human body, which provide the basis for the study of clinical disciplines and contribute to the formation of medical thinking

2. Summary of the discipline

• **Section No. 1. "Cytology".**

Microscopy techniques in light microscopes. The subject and tasks of cytology, its significance in the system of biological and medical sciences. Basic provisions of cell theory at the present stage of scientific development. The relationship between the shape and size of cells and their functional specialization.

• **Section No. 2. "General histology."**

Tissues as systems of cells and their derivatives are one of the hierarchical levels of organization of living things. Cells as leading elements of tissue. The concept of cellular differons. Principles of tissue classification. Compensatory-adaptive and adaptive changes in tissues. Covering epithelia. Borderline position. The relationship between the morpho-functional characteristics of epithelial tissue and its borderline position in the body. Cytokeratins as markers of various types of epithelial tissue. Tissues of the internal environment. General characteristics of connective tissues, classification. Sources of development. Histogenesis. Classification. Factors influencing the structure of bone tissue. Muscle tissue. General characteristics and histogenetic classification. Nervous tissue. General characteristics of nervous tissue. Embryonic histogenesis. Differentiation.

• **Section No. 3. "Private histology".**

The source and course of embryonic development of organs in systems. Nervous system. Cytoarchitecture of the layers of the cerebral cortex. Myeloarchitecture – radial and tangential nerve fibers. Blood-brain barrier, its structure and functions. Sense organs. Classification. General principle of cellular organization of receptor compartments. Neurosensory and sensoroepithelial cell receptors. Age-related changes. The cardiovascular system. Classification of vessels. The concept of the microvasculature. Age-related changes in the vascular wall. The structure of the heart wall, its membranes, their tissue composition. Restructuring and development of the heart after birth. System of hematopoietic organs and immune defense. The main sources and stages of the formation of hematopoietic organs in ontogenesis. Mesoblastic, hepatosplenotymic and medullary stages of the formation of the hematopoietic system. Morphological basis of the body's defense reactions. Endocrine system, General characteristics and classification of the endocrine system. Central and peripheral parts of the endocrine system. The concept of hormones, complementarity of receptors in target cells to hormones. Mechanism of regulation.

Digestive system. General characteristics. Digestive glands, their classification. Respiratory system. General characteristics. Age-related changes. Regeneration. Lungs. Acinus is a morpho-functional unit of the lung. Alveolar barrier, its significance. Leather and its derivatives. General characteristics, tissue composition, regeneration. Leather derivatives. System of urinary and urinary organs. General characteristics. Reproductive systems. Primary gonocytes, initial localization, migration paths to the gonad primordium. Sexual differentiation. Male genital organs. Development of the vas deferens. Testicle. Structure. Histophysiology of straight tubules, rete tubules and efferent tubules of the testis. Age characteristics. Female genital organs. Ovary. Development. General characteristics. Structure. The concept of the ovarian cycle and its regulation. Age characteristics. Uterus. Restructuring of the uterus during pregnancy and after childbirth. Age-related changes. The fallopian tubes. Structure and functions. Breast. Structure. Postnatal changes. Functional morphology of lactating and non-lactating mammary glands. Neuroendocrine regulation. Changes in the mammary glands during the ovarian-menstrual cycle and pregnancy.

- **Section No. 4. "Embryology".**

Purpose, content, place of embryology in the system of doctor training. Embryology of mammals as a basis for understanding the characteristics of human embryonic development. An idea of the biological processes underlying the development of the embryo - induction, determination, division, growth, differentiation, cell interaction, cell death. Features of human embryonic development. Process disturbances, Critical periods in development. General characteristics and periodization of postnatal development. Factors influencing development: genetic, maternal, environmental (radiation, alcohol, smoking, drugs, infections, chemicals and drugs, pesticides, etc.).