**Semester 1**

**E-lectures** (carried out in the form of e-learning on the MSTeams)

1. The cell, cell organelles: nucleus, endoplasmic reticulum, mitochondria, Golgi complex, lysosomes. Chromatin and Chromosomes, Classification of chromosomes, DNA.
2. Cytophysiology: Cell membranes: Biochemical components – lipids (phospholipids), proteins (integral and peripheral membrane proteins), carbohydrates (glycocalyx). Membrane organization – fluid mosaic model. Transport across membranes. Cytoskeleton: Microfilaments – structure, Intermediate filaments – structure, types, role in medical diagnostics, Microtubules. Centrioles: structure, function.
3. Epithelial tissue. Characteristic features of epithelia. Function. Classification: simple squamous epithelium, simple cuboidal epithelium, simple columnar epithelium, pseudostratified epithelium, stratified squamous epithelium, stratified cuboidal epithelium, stratified columnar epithelium, transitional epithelium. Communication between cells: intercellular junctions: desmosome, hemidesmosome, gap junction. Signal receptors and signaling mediated by intracellular receptors. Specific epithelial types: microvilli, cilia, flagella, stereocilia. Basal lamina and basement membrane. Glands: Exocrine and endocrine glands. Way of secretion: merocrine, apocrine, holocrine.
4. Connective tissue. Components of connective tissue: ground substance, fibers, cells: fibroblasts, fibrocytes, plasma cells, mast cells, macrophages mesenchymal cells, reticular cells. Connective tissue types: loose and dense (regular and irregular), mucous connective tissue (Wharton’s jelly), reticular connective tissue, adipose tissue (white and brown). Cartilage – hyaline, elastic and fibrous.
5. Blood: Composition of plasma, blood cells: erythrocytes, leukocytes, platelets. Bone marrow: red bone marrow and yellow bone marrow. Bone: bone cells (osteocytes, osteoblasts, osteoclasts), bone matrix, Organization of spongy bone and compact bone, Osteon. Hematopoiesis and blood function.
6. Nervous tissue. Development of nervous tissue. General characteristics. Cells of nervous tissue: neurons and glial cells : astrocytes (protoplasmic and fibrous), oligodendrocytes, Schwann cells, microglia, ependymal cells. Peripheral nerve. Synapses. Nerve fibers. (45 min)
7. Muscle tissue. Development of muscle tissue. General features of muscle tissue. Organization and types of muscle tissue: skeletal muscle, cardiac muscle, smooth muscle. Stem cells.
8. Cardiovascular & Immune systems. Development of cardiovascular system. General organization of blood vessels. Types of blood vessels: arteries, veins, capillaries (continuous, fenestrated, sinusoidal capillaries). Lymphatic vascular system. Central and peripheral lymphoid organs: thymus, lymph nodes, spleen, MALT, GALT, BALT. Cells of immune system: lymphocytes T and B, NK cells, plasma cells.

**Semester 2**

**E-lectures** (carried out in the form of e-learning on the MSTeams)

1. Oral cavity: lips, tongue, papillae: filiform, fungiform, foliate, circumvallate. Salivary glands: parotid gland, submandibular glands, sublingual gland. Types of glands. lips, tongue, salivary glands.
2. Digestive system p. I: esophagus: wall layers, stomach: wall layers; regional differences-cardia, fundus and body, pylorus; gastric pits; cardiac glands; gastric glands (cell types: parietal cells, chief cells, enteroendocrine cells, mucous neck cells, undifferentiated cells, their functions); pyloric glands. Small intestine: histological structure, regional differences: duodenum, jejunum and ileum. Large intestine: histological structure. Appendix-histological structure, function.
3. Digestive system p. II: liver: general structure and functions, blood supply, liver lobules (classic liver lobule, portal lobule, hepatic acinus of Rappaport), portal triad, cell types (hepatocytes, Kupffer’s cells, Ito cells), biliary system. Pancreas: general structure and function, exocrine part (pancreatic acinar cells, centroacinar cells), endocrine part (islets of Langerhans). Gallbladder: histological structure.

Endocrine system. Hypophysis (Pituitary gland): adenohypophysis, neurohypophysis, neurohypophyseal hormones and their effects; control of pars nervosa); Neuroendocrine Hypothalamo-Hypophyseal System (NHS). Pineal gland: general structure, histophysiology-circadian biorhythms. Thyroid: general structure, parafollicular cells (C cells). Parathyroid glands: histological structure. Adrenal gland: Adrenal Cortex: general structure; function. Adrenal medulla: structure; cell types, function.

1. Respiratory system. : components and functions. Nasal cavity. Paranasal sinuses. Larynx: general structure, vocal apparatus. Trachea: general structure. Bronchial tree: bronchi, brioncholes, terminal bronchioles (Clara’s cells), respiratory bronchioles, alveolar ducts and sacs. Alveoli-alveolar cell types, pulmonary surfactant, blood-air barrier. Urinary system: Kidney: cortex and medulla; nephron. Ureter: wall layers. Urinary bladder: histological structure. Urethra.
2. Male reproductive system. Testis: general organization, blood-testis barrier. Ducts of the male reproductive system: tubuli recti, rete testis, ductuli efferent, ductus epididymis. Epididymis: histological structure and function. Ductus deferens: wall layers. Seminal vesicles: histological structure and function. Prostate gland: histological structure and function. Penis: general organization.
3. Female reproductive system. Ovary: general organization. Fallopian tube: structure of the wall. Uterus: general structure, changes in menstrual cycle; uterine cervix. Vagina: histological structure. (45min)
4. Skin and ear. Skin: epidermis (cell layers, keratinocytes-keratinizing system, melanocytes-melanin synthesis, Langerhan’s cells, Merkel’s cells), dermis and hypodermis; sweat glands: eccrine and apocrine; sebaceous glands. Hair: follicle and hair structure. Fingernail: histological structure. Mammary gland: general structure, resting gland and lactating gland. Ear: external ear, tympanic membrane; middle ear; internal ear-vestibular organs, cochlea.
5. Nervous system and eye. Brain: cerebral cortex. Cerebellum: cortex and medulla, Purkinje cells. Spinal cord. Ganglia. Eye: tunica fibrosa: cornea, sclera; tunica vasculosa (uvea): choroid, ciliary body, iris; tunica interna (retina): layers of retina, fovea centralis, optic disk; lens-histological structure.