UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Human Anatomy

2021-1-I0101D001-I0101D004M

Aims

The student must achieve the knowledge of the histological and anatomical bases essential for the study and understanding of the human physiology and pathology. He must also know: the structure and function of cellular components and molecular mechanisms; the chromosomal disorders; the concepts and methods of transmission of hereditary characteristics and of pathogenic mechanisms “non-traditional”; the qualitative and quantitative knowledge of biological phenomena.

Contents

The course aims to describe the organization of the human body; to explain how are cells and tissues organized to form organs and systems; to underline the functional correlations of micro- and macroscopic anatomy. It also aims to transmit the knowledge of the structure and function of the various components of eukaryotic cells, the molecular mechanisms involved in cell replication, the molecular mechanisms involved in gene expression; the chromosomal disorders and transmission pattern in Mendelian monogenic diseases as well as the basis for the qualitative and quantitative knowledge of biological phenomena for a correct application of therapies.

Detailed program

General Anatomy - Anatomic terms; planes, lines and anatomical landmarks; terms related to movement; principles of organization of the human body: cells, tissues, organs, systems; serous cavities and connective spaces, their location and content. Muscularskeletal system - Classification of the bones, muscles and joints. The skull: cranium and facial bones: general architecture of the skull and main characteristics of the individual bones; base of the skull: cranial fossae and major foramina with the structures that each transmits; cranial sutures; neonatal skull; nasal cavity, orbital cavity, paranasal sinuses; temporomandibular joint; general features of mimic and masticatory muscles. The vertebral column: general characteristics of the vertebrae and regional differences; atypical cervical

vertebrae: atlas and axis; joints of the vertebral column; general features of the muscles of the back. Neck: main characteristics of the muscles of the neck. Chest: bones and cartilages of the thoracic cage; joints of the ribs and costal cartilages; muscles of the thorax, respiratory muscles, in particular diaphragm muscle. Shoulder girdle and upper limb: main characteristics of the different bones; shoulder and elbow joints, main features of the other joints; muscles of the shoulder, the rotator cuff, arm muscles, general features of forearm and hand muscles. Pelvis and lower limb: study of the hip bones in detail, main characteristics of the other bones; joints and ligaments of the pelvis, hip joint, knee joint, main features of the other joints; hip and thigh muscles, muscles of the leg, general features of foot muscles; Scarpa's triangle and adductor canal. Abdominal wall: anterolateral and posterior abdominal wall muscles; inguinal ligament; inguinal canal. Pelvic floor: pelvic diaphragm; perineum. Cardiovascular system - Heart: surface, structure, chambers of the heart, conducting system; heart vessels; pericardium; mediastinum: definition, borders and contents. Blood vessels: vessels structure (arteries, veins and capillaries); pulmonary and systemic vascularization, with major focus on: aorta and its branches; Polygon of Willis; blood supply of the upper and lower limbs; blood supply of the organs; superior and inferior vena cava venous system; portal vein system; anastomosis. Lymphatic system - General organization of the lymphatic drainage. Thoracic duct. Position, relations, macroscopic and microscopic anatomy of the lymphoid organs: thymus, spleen, lymph nodes and tonsils; main lymph node chains. Respiratory system - Nose, nasal and paranasal cavities. Position, relations, macroscopic and microscopic anatomy of the organs of the respiratory tract: pharynx, larynx, trachea, bronchi, lungs. Blood supply of the organs. Visceral and parietal pleura. Digestive System - Oral cavity. Salivary glands. Position, relations, macroscopic and microscopic anatomy of the organs of the gastrointestinal tract: esophagus, stomach, small intestine (duodenum, jejunum, ileum), large intestine (cecum, appendix, colon and rectum). Other organs of the digestive system: liver, bile ducts, gallbladder, pancreas; their position, relations, macroscopic and microscopic anatomy, with focus on the different types of hepatic lobules. Blood supply of the organs. Peritoneum: general arrangement, ligaments, omenta, esenteries, intraperitoneal and retroperitoneal relationships of the different organs. Urinary system - Position, relations, macroscopic and microscopic anatomy of the organs of the urinary tract: kidneys, with focus on the structure of the nephron, bladder, ureter, male and female urethra. Blood supply of the organs. Endocrine system - General characteristics of hormones. Position, relations, macroscopic and microscopic anatomy of the endocrine organs: pituitary gland and its connection with the hypothalamus, thyroid, parathyroid, adrenal gland, endocrine pancreas, pineal gland. Blood supply of the organs. General characteristics of GEP system. Female reproductive system - Position, relations, macroscopic and microscopic anatomy of the female genital organs: ovary, uterus, fallopian tube, vagina. Blood supply of the organs. External genitalia: morphology, relations and structure. Main characteristics of placenta. Male reproductive system - Position, relations, macroscopic and microscopic anatomy of the male genital organs: testis, epididymis, vas deferens, prostate, seminal vesicles and bulbourethral glands. Structures of the spermatic cord. Blood supply of the organs. External genitalia: morphology, relations and structure. Integumentary system - Skin and its appendages. Mammary gland: position, relations, macroscopic and microscopic anatomy. Blood supply of the skin and mammary gland. Nervous system - General morphologic and functional organization. Synapses, neurotransmitters and anatomical basis of the reflex arch. Central nervous system - Basic concepts on nervous system development. Position, relations, gross morphology, major features concerning microscopic organization and main functions of the following structures: spinal cord; hindbrain: medulla, pons, cerebellum, IV ventricle; midbrain; diencephalon; forebrain. Meninges: architecture and functions. Cerebrospinal fluid (CSF): composition, circulation and functions. Peripheral nervous system - Cranial nerves, spinal nerves plexuses) and their territory of innervation. Autonomic nervous system: general architecture and innervation of organs. Special senses - Eye: the orbit and its contents, basic concepts on the structure of the eye-ball and its muscles. Lacrimal apparatus. Ear: general structure and components of the outer, middle, inner ear.

Prerequisites

Teaching form

During the Covid-19 emergency period the lessons will be held in mixed mode: partial presence of students in classrooms and asynchronous/synchronous videorecorded lessons.

Textbook and teaching resource

One of the following books: Ambrosi G. et al. Anatomia dell'uomo (2006) Ed. Edi-Ermes; Bentivoglio M. et al. Anatomia umana e Istologia (2010) Ed. Minerva Medica; Gilroy A.M. Elementi di Anatomia umana (2017) Ed. Edises; Martini F.H. et al. Anatomia umana - VI ed. (2016) Ed. Edises; McKinley M., O'Loughlin V.D. Anatomia umana (2014) Ed. Piccin; Saladin K.S. Anatomia umana (2011) Ed. Piccin; Seeley et al. Anatomia - III ed. (2014) Ed. Idelson Gnocchi.

Semester

1st year, 1st Semester

Assessment method

Written examination: multiple choice and open ended questions

Office hours

On appointment