

HUMAN ANATOMY 2 (MG0409)

Integrated course

1. language

Italian

2. course contents

Coordinator: Prof. CLAUDIO SETTE

Year Course: II°

Semester: I°

UFC: 12

Modules and lecturers:

ANATOMIA UMANA (MG0410) - (SSD BIO/16) (8 UFC):

Prof. Amelia Toesca, Prof. Valentina Corvino, Prof. Giovanni Zelano (I° canale)

Prof. Claudio Sette, Prof. Maria Concetta Geloso, Prof. Camilla Bernardini, Prof. Stefano Giannetti (II° canale)

ANATOMIA UMANA ATTIVITA' PROFESSIONALIZZANTE (MG000010) - (SSD BIO/16) (3 UFC):

Dr. Valentina Corvino, Dr. Stefano Giannetti, Dr. Giovanni Monego, Dr.ssa Chiara Naro, Dr. Vittoria Pagliarini, Dr. Giovanni Zelano

SEMINARI INTEGRATIVI (A000537) - (SSD NN) (1 CFU)

3. bibliography

S. STANDRING, Anatomia del Gray, Ed. Edra

G. ANASTASI et al., Trattato di Anatomia Umana, Ed. Edi-Ermes

A.M. BURT, Trattato di Neuroanatomia, Ed. Piccin

NOLTE, Anatomia del sistema nervoso centrale, Ed. Edra

M.J.T. FITZGERALD et al., Neuroanatomia: con riferimenti funzionali e clinici, Ed. Edra

F.H. NETTER, Atlante di Anatomia Umana, Ed. Edra

PROMETHEUS, Atlante di Anatomia, 2ª edizione italiana, Ed. EdiSes

AUTORI VARI, Istituzioni di Anatomia dell'uomo, Testo/Atlante, 12ª edizione, Ed. Piccin

G. ANASTASI, C. TACCHETTI, Atlante Anatomia Umana, 1ª edizione, Ed. Edi-Ermes

K.L. MOORE, A.D. DOLLEY, Anatomia Umana con riferimenti clinici, Ed. Casa Editrice Ambrosiana

G. FAMILIARI, Anatomia Microscopica, Ed. Piccin

It is necessary for the student to have an Anatomy text of their choice from the recommended ones or another text after approval by the Lecturers. It is strongly recommended to choose an Anatomy atlas from the recommended ones. The neuroanatomy text and microscopic anatomy text are optional.

4. learning objectives

The aim of the course is to provide the student with the necessary skills to understand and know the relationship, conformation and organization of the anatomical structures of the human body and to apply the knowledge acquired in the recognition of anatomical structures in radiological images. In particular, the course of Human Anatomy 2 is focused on the study of neuroanatomy and organs of the abdominopelvic cavity, thus completing the knowledge of the human body initiated with the Human Anatomy 1 course. These skills are necessary to acquire a complete overview of the organization of the human body and to enable the student to fully learn the contents of subsequent studies on the pathophysiology of organs and surgical disciplines.

Knowledge and understanding (Dublino 1) At the end of the course, the student must demonstrate that he/she has acquired the skills to understand and know the topographical, macroscopic and microscopic organization of the anatomical structures of the human body, that he/she is able to apply the acquired knowledge to the recognition of anatomical structures in radiological images, and that he/she has understood how the study of anatomy is the essential prerequisite for understanding the pathophysiological mechanisms of the structures of the human body.

Applying knowledge and understanding (Dublino 2) At the end of the course, the student must be able to apply the knowledge acquired on the morphological and functional organization of anatomical structures to recognize any alterations related to the functional mechanisms of human body structures.

Making judgements (Dublino 3) At the end of the course, the student must be able to integrate the knowledge and skills acquired to recognise the differences between physiological and non-physiological anatomical structures.

Communication skills (Dublino 4) At the end of the course, the student should be able to identify and describe anatomical structures using the correct terminology and to express him/herself clearly and unambiguously with specialist and non-specialist interlocutors.

Learning skills (Dublino 5) At the end of the course, the students should be able to self-assess their skills, expand their knowledge and update themselves by independently querying texts, scientific articles and online platforms.

5. PREREQUISITES

In order to follow the Human Anatomy 2 lessons efficiently, the student must have attended the Human Anatomy 1 course and he/she must have already acquired knowledge of Biology and Histology. The study plan for the degree course in Medicine and Surgery requires the Biology and Histology exams to be passed before taking the Human Anatomy exam.

6. teaching methods

The course is based on lessons with the aid of image projection. In the Human Anatomy 2 course, the majority of the topics present in the program are treated, with particular emphasis on the most relevant and essential aspects for the formation of a future medical doctor, in order to provide the student with a complete overview of the knowledge to be acquired, the correct method of study and anatomy terminology. Frontal teaching is integrated with professional activity on macroscopic, microscopic and radiological anatomy topics with the aim of stimulating students to reason and connect theoretical and practical knowledge. The professional activity involves students, divided into groups, taking part in lessons aimed at identifying in radiological images the anatomical structures described in the lectures and at carrying out microscopic anatomy exercises based on the observation and description under the light microscope of histological preparations of the pituitary gland and organs of the nervous system. Students will also participate to Anatomy lessons using the Anatomage anatomical table located at the GTC of the Policlinico Gemelli.

During the course, there will be self-study hours: students in small groups will be able to examine anatomical sections of the human body on the computer and compare them with CT or MRI X-ray images (Visible Man Project).

7. other informations

The Lecturers are available for information on the course and clarification of the lesson topics by e-mail appointment or, if a quick request is needed, at the end of the lessons.

Student's choice activities: a series of clinical anatomy workshops are planned. For each workshop attended, lasting approximately 2 hours, the student may acquire 0.25 UFC.

The student may choose to attend one or more of the following clinical seminars:

- "The key role of knowledge of lymph node stations" - Lecturer Dr. Nicola Dinapoli
- "The lymphatics of the breast in the invasive pathology of the organ" - Lecturer Dr. Armando Antinori
- "The knowledge of topographic anatomy and its application in modern clinical radiotherapy" - Lecturer Dr. Luca Boldrini
- "The anorectal-sigmoid lymphatics in the invasive pathology of the digestive segment" - Lecturer Prof. Claudio Coco
- "Endoscopic analysis of normal and malformed biliary and pancreatic tracts" - Lecturer Prof. Vincenzo Perri
- "La SPECT nell'analisi morfo-funzionale dell'encefalo" – Lecturer Dr.ssa Daniela Di Giuda

8. methods for verifying learning and for evaluation

The Human Anatomy exam takes place in oral form and cover all the program of the Human Anatomy 1 and Human Anatomy 2 courses including the topics of the the professional activities. The oral exam consists in questions on the theoretical aspects of the topics covered in the two courses aimed at verifying the student's solid understanding and knowledge of the course content, also with a view to future clinical application; the student's ability to reason and his/her ability to describe the acquired concepts with propriety of language is also verified. The final grade is expressed in thirtieths. The student may obtain the maximum mark of 30/30 if he/she is able to express him/herself using the correct terminology and that he/she has fully acquired the knowledge and skills provided by the course; the student must also have passed the intermediate tests with a minimum mark of 28/30 in each test. The honours will be awarded, subject to the achievement of a mark of 30/30 in all the *in itinere* tests, to students who have demonstrated an excellent level of knowledge and in-depth study of the content with reasoning, autonomy of study, property of language and excellent communication skills.

During the Human Anatomy 2 course, an in intermediate written test with multiple-choice questions on the spinal plexi, with particular reference to the innervation of the limbs, is scheduled. The written test requires a predominantly notionistic study with some clinical references. The evaluation is expressed in thirtieths and a minimum mark of 18/30 is required to pass. The intermediate written tests are optional and not propedeutic. To attend the Anatomy exam, the student must have passed all the intermediate written tests of Human Anatomy 1 and Human Anatomy 2 courses. The intermediate examinations taken in the Human Anatomy 1 and Human Anatomy 2 courses account for $\frac{1}{4}$ of the final grade and are valid until the extraordinary examination session in December 2025.

9. program

<HUMAN ANATOMY 2>

Muscle system. Muscles of the trunk, in particular the muscles of the anterolateral and posterior abdominal wall, the muscles of the pelvic diaphragm, the muscles of the perineum, the inguinal canal, the ischio-rectal fossa. Extrinsic eye muscles; muscles of mastication.

Circulatory system. Abdominal aorta with terminal and collateral branches, main anastomoses, inferior vena cava and main tributaries, portal vein and porto-systemic anastomoses; arterial and venous vessels of the encephalon and spinal cord. Radiological anatomy

Lymphatic system. Thoracic duct. Lymph nodes and major lymphatic networks. Spleen, external and internal conformation, structure, microscopic anatomy, relationships, vessels, innervation, lymphatic drainage.

Digestive system. External and internal conformation, structure, microscopic anatomy, relationships of stomach, duodenum, jejunum, ileum, appendix, cecum, colon, rectum; vessels with main anastomotic circles, innervation, lymphatic drainage. Radiological anatomy.

Liver: external and internal conformation, structure, relationships, liver segments, microscopic anatomy, vessels, innervation, lymphatic drainage; gallbladder and biliary tract. Pancreas: external and internal conformation, structure, microscopic anatomy, relationships, vessels, innervation, lymphatic drainage. Radiological anatomy.

Urinary apparatus. External and internal conformation, structure, relationships of kidney, ureter, bladder, urethra; organisation of the nephron; vascularisation, innervation, lymphatic drainage. Radiological anatomy.

Reproductive apparatus. External and internal conformation, structure, microscopic anatomy, relationships of testis, epididymis, vas deferens, seminal vesicles, prostate, ovary, tubes, uterus, vagina, external genitalia, breast; vessels, innervation, lymphatic drainage.

Serous membranes. Peritoneum in relation to the viscera. Retroperitoneal, supra- and sub-mesocolic regions.

Endocrine glands. External and internal conformation, structure, relationships, macroscopic anatomy of pituitary gland, thyroid, parathyroids, adrenal glands; vessels, innervation, lymphatic drainage.

Nervous system. General organisation. Macroscopic anatomy and organisation of the neuraxis. Meninges, ventricular system and cerebrospinal fluid circulation. Structure of the spinal cord and brainstem. Spinal nerves; cervical plexus, brachial plexus, lumbosacral plexus and peripheral nerves with course, main branches and distribution territory. General somatic and visceral sensory systems (posterior cord pathway and anterolateral system). Organisation and main connections of the thalamus. Organisation and structure of the cerebral cortex, main functional areas and main connection bundles. Motor systems: cortico-spinal and cortico-nuclear tracts, rubro-spinal tract, tecto-spinal tract, reticulo-spinal tracts, vestibulo-spinal tracts. Organisation of the cerebellum and cerebellar circuits. Basal nuclei and related circuits (direct and indirect circuits). Hypothalamus: organisation and main connections, relations with the autonomic nervous system; hypothalamic-pituitary system and neuroendocrine correlations. Limbic system and main connections (hippocampus and amygdala).

Organisation of the autonomic nervous system (orthosympathetic and parasympathetic) in the neuraxis and cranial and spinal nerves.

Cranial nerves: oculomotor nerve, trochlear nerve, abducens nerve, trigeminal nerve, facial nerve, glossopharyngeal nerve, vagus nerve, accessory nerve, hypoglossal nerve; nuclei, main connections, peripheral course with main branches, distribution territory.

Eye, central visual pathways and ocular motility control systems. Ear, acoustic and vestibular pathways. Gustatory pathway. Olfactory mucosa and olfactory pathway.

Radiologic anatomy of central nervous system

<PROFESSIONAL ACTIVITY>

Radiological anatomy of the digestive system

Radiological anatomy of the abdominal aorta and its branches

Radiological anatomy of the brain and spinal cord

Radiological anatomy of the urinary tract

Radiological anatomy of the encephalic vessels

Microscopic anatomy of the nervous system and pituitary gland

Macroscopic anatomy of the abdomino-pelvic cavity