UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Neuroanatomy I

2627-4-H4102D120-H4102D101M

Aims

Overall aims.

The objectives of the course are to provide expertise in normal anatomy, embryology of the nervous system. Teaching will include reference to topographic, radiologic, and clinical anatomy. Practical activities using models (also virtual 3D) and clinical case simulations will be used to reach the teaching objectives.

Dublin descriptors for the learning outcomes:

1. Knowledge and understanding: students will deepend their knowledge of the central and peripheral system anatomy with a clinically-oriented approach;
2. Applying knowledge and understanding: exploiting knoweldge described in point (1), students will be enabled to interpret clinical and diagnostic findings understanding if observed features are normal or not;
3. Making judgements: students will be able to correctly allocate clinical decision based on clinically-oriented anatomy exploitation;
4. Communication skills: students will deepen their ability to discuss with colleagues and patients/caregivers on clinically-oriented anatomy facts relevant to this vertical track;
5. Learning skills: students will deepen their ability to interpret diagnostic findings at clinical evaluation as well as during radiological/diagnostic exames (e.g., US) interpretation.

Contents

The goal of the course is to provide a detailed knowledge of anatomy of the nervous system required for a correct physical examination and understanding of the diseases pathogenesis.

Detailed program

Neuroanatomy I (2?? term of 4?? year).

Development of the nervous system: neurulation, neural crest formation and differentiation, primary and secondary brain vesicles and their development, formation of midline structures, development of the spinal cord. Neural tube defects and major disorder of brain development.

Introduction to the study of the nervous system: general organization of the central nervous system.

Central nervous system:

1. External and internal structure of spinal cord, brainstem, cerebellum, diencephalon and telencephalon.

2. Brainstem: medulla, pons and mesencephalon; nuclei of cranial nerves and other major nuclei; reticular formation.

3. Tectum mesencephali.

4. Diencephalon: thalamus, hypothalamus, subthalamus, epithalamus

5. Telencephalon: cerebral cortex, cortical areas, localization of functions; basal ganglia.

6. The limbic system.

7. Blood supply of the brain and spinal cord.

8. Ventricular system and cerebrospinal fluid.

9. Coverings of the brain and spinal cord (meninges).

10. The major pathways: spinal and medial lemniscal tracts; spinocerebellar tracts; lateral and medial descending motor systems; cerebellar and basal ganglia motor control; visual, auditory and vestibular system.

Peripheral nervous system (general organisation)
1. Cranial nerves
2. Spinal nerves and plexi
3. Autonomic nervous sytem

Prerequisites

Knowledge acquired during the 1?? year in the “Fundamentals of Human morphology” course.

Teaching form

Didactive activities rely on different teaching methods (lessons): the 30 hours of the entire course are planned into in-person lessons in the Anatomy Room, u8/Asclepio building in Monza.
Each lesson is divided into a first part of a delivery nature: the teacher presents the contents using the virtual dissection table present in the Anatomy Room (Anatomage Table) to allow students to visualise the structures

presented in 3D.
In the second part of the lesson, the teaching method is interactive: the class is divided into small groups of no more than 6-8 students, also relying on a flipped classroom type activities. The students carry out exercises to consolidate the information presented in the first part of the lesson using the 3D models available in the classroom, paper and/or online teaching materials made available by the teacher and using Anatomage Table for virtual dissections personally. Gamification strategy is also part of the interactive activities: a small team tournament among the different group is performed using the quiz mode of *Anatomage Table*.

All didactive activites are carried out in English language.

Textbook and teaching resource

. Treatise on Human Anatomy, Neuroantomy (Vol. 3), 1st Edition, by Anastasi (edi-ermes)

· Gray's Anatomy: The Anatomical Basis of Clinical Practice, 41st Edition, by Susan Standring (Elsevier)

. Nolte's The Human Brain, 8th Edition by Todd W. Vanderah & Douglas J. Gould (Elsevier)

· Snell's Clinical Neuroanatomy, 8th Edition, by Ryan Splittgerber (Lippincott Williams & Wilkins)

· Clinical Neuroanatomy, 29?? Edition, by Stephen Waxman (Mc Graw Hill)

· Fitzgerald's Clinical Neuroanatomy and Neuroscience, 8?? Edition, by Estomih Mtui, Gregory Gruener, Peter Docker (Elsevier)

Semester

2?? term of 4?? year.

Assessment method

Topics presented in Neuroanatomy I course is verified with an oral examination with the support on the 3D virtual Table Anatomage for virtual dissection which is available in u8 building (Monza); the evaluation is part of the general assessment of the *Neuroscience I* course. For more details on the integrated exam, please, refer to *Neuroscience I* syllabus, as the exam requires all subjects to be tested in a single day. Briefly, the oral exam is preceded by a multiple choice exam covering all subjects except *Neuroanatomy I* and *Semiotics*. Only if the students pass the written test, they are admitted to the oral test which focuses on these last two subjects. For what regards *Neuroanatomy I* all topics enlisted in the syllabus are to be tested, also exploting Anatomage Table. The final grade will be generated as a weighted average of the mark obtained in each subject, taking into account the credits assigned to each of them.

Office hours

Appointments will be given upon contacting by email the teaching staff.

Sustainable Development Goals

QUALITY EDUCATION | GENDER EQUALITY | REDUCED INEQUALITIES