



UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Clerkship 8

2627-5-H4102D034

Aims

Prepare students for the recognition, diagnosis, and management of neurological, neurosurgical, psychological, psychiatric, and biosensor-related conditions by developing integrated theoretical knowledge and practical clinical competencies. Educational Objectives and Practical Skills

Neurology Recognize signs and symptoms of neurological disorders through deep understanding of pathophysiology and semeiology of nervous system dysfunction. (Knowledge and Understanding) Learn the classification and clinical features of major neurological diseases. (Knowledge and Understanding) Integrate clinical examination findings and diagnostic tests for etiologic diagnosis of neurological disorders. (Applying Knowledge and Understanding, Making Judgments)

Neurosurgery Understand neurological localization principles via semeiotics in CNS and PNS neurosurgical disorders. (Applying Knowledge and Understanding) Integrate patient history, semeiotics, and diagnostics to establish etiologic diagnoses in neurosurgical cases. (Applying Knowledge and Understanding, Making Judgments) Comprehend diagnostic-therapeutic pathways in elective and emergency neurosurgical settings and limitations of diagnostic tests. (Knowledge and Understanding, Making Judgments) Integrate neuroanatomy with topographic and surgical anatomy in operative contexts. (Applying Knowledge and Understanding) Appreciate the multidisciplinary collaboration of neurosurgery with ENT and maxillofacial surgery. (Knowledge and Understanding, Learning Skills)

Biosensors and Monitoring Understand design and development of biomedical signal acquisition systems. (Knowledge and Understanding) Apply methods for collecting biomedical signals and extracting patient-specific data. (Applying Knowledge and Understanding) Evaluate clinical applications with focus on CNS disorders. (Making Judgments)

Clinical Psychology Learn principles of clinical psychology and neuropsychology in hospital settings. (Knowledge and Understanding) Integrate clinical history, semiotics, and multifactorial assessments of psychological and neuropsychological disorders. (Applying Knowledge and Understanding) Recognize indications for referral to psychological or neuropsychological consultation. (Making Judgments)

Psychiatry Conduct psychiatric interviews and take comprehensive histories. (Applying Knowledge and Understanding, Communication) Formulate differential diagnoses based on clinical history and psychiatric findings. (Making Judgments) Select and prioritize diagnostic tools for accurate psychiatric diagnosis. (Applying Knowledge and Understanding, Making Judgments) Determine therapeutic options emphasizing precision psychiatry. (Making Judgments) Communicate treatment plans clearly to patients and caregivers. (Communication)

Contents

The course will provide elements to collect an adequate medical history, including family history, to perform a complete neurological and psychiatric evaluation or formulate the differential diagnostic hypotheses, to identify the appropriate exams to be performed and the priority of their execution, to refine the ability to interpret the results and their congruity with the patient's clinical history, to integrate the data in order to formulate an etiological diagnosis and set the appropriate therapy with attention to the risk / benefit balance of the proposed therapeutic choices.

Particular attention will also be given to the aspects of communication to the patient and his/her family in compliance with privacy laws.

The main indications for the use of instrumental investigations complementary to the discipline, both morphological (CT, MRI, PET, Cerebral Scintigraphy, Neuromuscular Ultrasound, Doppler and ECO-Doppler TGA and Transcranial) and functional (Electromyography, Electroencephalography and Evoked Potentials) will be provided. The methods of execution and preparation for individual investigations, with practical demonstration for neurophysiological methods. From the spontaneous biological electrical signal to the provoked one. Creation of a decision-making algorithm: starting from the symptom/patient, what are the optimal paths and times for individual pathologies.

Course Content Overview

1. Training in comprehensive history taking, including family history.
2. Complete neurological and psychiatric evaluations with formulation of differential diagnoses.
3. Identification and prioritization of appropriate diagnostic examinations.
4. Refinement of skills to interpret diagnostic results in clinical context.
5. Integration of clinical and diagnostic data to guide etiology and therapy, considering risk/benefit.
6. Communication skills with patients and families, respecting privacy laws.

Detailed program

The following main pathologies of the Central and Peripheral Nervous System will be addressed from the clinical, surgical and diagnostic perspectives: acute cerebrovascular diseases (ischemic strokes, cerebral hemorrhages, cerebral venous thrombosis), degenerative diseases (Alzheimer's and other dementing diseases; Parkinson's and other movement disorders; Amyotrophic Lateral Sclerosis and other motor neuron diseases); inflammatory diseases of the Central Nervous System (multiple sclerosis, neuromyelitis optica spectrum diseases); encephalopathies / encephalitis (toxic, dysmetabolic, autoimmune, infective, paraneoplastic); diseases of the neuromuscular junction (myasthenia and myasthenic syndromes); diseases of the peripheral nervous system; epilepsy; headache and cranial neuralgias; sleep disorders; syncope and diseases of the vegetative nervous system.

For clinical Psychology, the course will include: evaluation of clinical cases in Hospital and extra-Hospital setting (Centro Bambino e Famiglia_CBF e Consultorio Familiare). The internship in the Hospital will include a discussion of common psychological disorders related to acute or chronic illness (e.g., mood and anxiety disorder, adjustment disorder, post-traumatic stress disorders). In the extra-Hospital context the discussion of clinical cases will be on children violence and abuse (CBF) and on patients involved in the birth path (pre-conceptional counseling, pregnancy, puerperium), with procreative difficulties, difficult family relationships, couple problems and emotional difficulties.

The clinical Neuropsychology path will include the clinical assessment of neuropsychological disorders following Acquired Brain Injury, such as Traumatic Brain Injury, Stroke, Arteriovenous Malformation, Aneurysm, Encephalitis, Encephalopathy, Brain Tumor, Neurodegenerative disorders

For Psychiatry, the course will cover

- Psychiatric interview
- Mental State Examination (vigilance, consciousness, orientation, intelligence, attention, memory, appearance and behaviour, speech, thought, perception, affectivity, impulsivity, volition, insight)
- Schizophrenia spectrum-disorders
- Depressive Disorders

- Bipolar and related Disorders
- Anxiety Disorders
- Obsessive-Compulsive and related Disorders
- Trauma- and Stressor-Related Disorders
- Somatic Symptom and related Disorders
- Substance-related and Addictive Disorders
- Personality Disorders
- Neurocognitive Disorders
- Emergencies in Psychiatry

The basic knowledge about standard sensors used to measure and monitor biological parameters. The program explores a typical data acquisition and processing system, focusing on wearables-based systems will be also provided. A laboratory experience allows the students to put their hands on a system used for the discrimination between different tremors deriving from different neurological pathologies.

Prerequisites

Knowledge of the neuroanatomy and physiology of the Nervous System. Neuroscience 1. Basic knowledge of physics, mathematics and electronics. Knowledge of Image diagnostics.

Teaching form

Learning by Doing: clinical hands-on experience and supervised practice.

Clinical Mentorship: personalized guidance and feedback from specialists.

Reflective Debriefings: group discussions and case reviews.

Case-Based Learning: integrated theory and practice through clinical case studies.

Students will be divided into small groups of 3-4 students who will rotate in the different clinical areas: ordinary hospitalization, stroke unit, neurophysiology, first level outpatient clinic, second level outpatient clinics, emergency room. Students will be invited to personally collect the anamnesis and discuss it with their tutor, as well as to perform the clinical objective examination in the presence of the tutor who will guide them in the execution and interpretation of the results based on neurological semiotics. Diagnostic hypotheses and indications for the tests to be prescribed will be discussed together with the tutor.

Revision of images and reports during patients' experience in neuroradiology and nuclear medicine.

Laboratory and frontal small group lesson.

Textbook and teaching resource

Manuscripts, guidelines, slides.

Semester

2nd semestre 5th year

Assessment method

End of Clerkship evaluation, includes: >70% attendance and confirmation by the tutor of the required practical skills.

Office hours

by appointment

Sustainable Development Goals

GOOD HEALTH AND WELL-BEING | QUALITY EDUCATION
