

## CLINICAL NEUROSCIENCES (ML0162)

### 1. language

English.

### 2. course contents

Coordinator: Prof. SERVIDEI SERENELLA

Academic Year: 2022/2023

Year Course: fourth year

Semestre/Semester: II semester

CFU/UFC: 12

Moduli e docenti incaricati /Modules and lecturers:

- CLINICAL PHYSIOLOGY I (ML0167) - 1 cfu - ssd BIO/09

Prof. Maria Vittoria Podda

- GENERAL PRINCIPLES OF NEURORADIOLOGY (ML0166) - 1 cfu - ssd MED/37

Prof. Giuseppe Maria Di Lella, Simona Gaudino

- GENERAL PRINCIPLES OF NEURORADIOLOGY PROFESSIONAL TRAINING (ML0165) - 1 cfu - ssd MED/37

Prof. Tommaso Verdolotti, Giuseppe Maria Di Lella, Simona Gaudino, Rosalinda Calandrelli, Luca Ausili Cefaro, Rosellina Russo e Maria Martucci

- NEUROLOGY (ML0169) - 3 cfu - ssd MED/26

Prof. Anna Rita Bentivoglio, Camillo Marra, Serenella Servidei, Massimiliano Mirabella

- NEUROLOGY PROFESSIONAL TRAINING (ML0163) - 1 cfu - ssd MED/26

Prof. Aldobrando Broccolini, Serenella Servidei, Camillo Marra, Anna Rita Bentivoglio, Davide Quaranta, Marco Luigetti, Massimiliano Mirabella

- NEUROSURGERY (ML0170) - 2 cfu - ssd MED/27

Prof. Francesco Doglietto, Alessandro Olivi, Gianpiero Tamburrini, Massimiliano Visocchi, Enrico Marchese

- NEUROSURGERY PROFESSIONAL TRAINING (ML0164) - 1 cfu - ssd MED/27

Prof. Giovanni Sabatino, Francesco Doglietto, Luca Massimi, Giuseppe Maria Della Pepa, Enrico Marchese, Gianpiero Tamburrini, Nicola Montano

- PSYCHIATRY (ML0168) - 2 cfu - ssd MED/25

Prof. Gabriele Sani, Luigi Janiri, Giovanni Camardese

### 3. bibliography

- Harrison's neurology in clinical medicine. Hauser SL; McGraw Hill, 4<sup>th</sup> Edition

- Synopsis of psychiatry. Kaplan HI and Sadock BJ; Wolters Kluwer, 12<sup>th</sup> Edition

- Neuroscience 6th edition. Dale Purves, George J Augustine, David Fitzpatrick, William C. Hall, Anthony-Samuel Lamantia, L.E. White, Richard D. Mooney, Michael L. Platt, Leonard E. White-, Oxford University Press

All the documentation presented in the classroom is to be considered mandatory learning material and will be made available to the students.

#### 4. learning objectives

The course is divided in 5 strongly integrated didactic modules with the following objectives

- to give students basic knowledge of etiology, pathogenesis, diagnosis, management, treatment and prevention of diseases in Neurology, Neurosurgery and Psychiatry
- to teach students to develop a correct approach to diagnosis and management of common and rare disorders, to recognize symptoms and formulate differential diagnosis based on signs and symptoms, to use and interpret common diagnostic exams in Neurophysiology and Neuroradiology and to develop a systematic approach to manage both common and rare diseases
- to provide students with the skills and knowledge to initiate the development of a patient-specific plan of care
- to help students to improve their ability to think, both critically and analytically
- to help students to develop professional responsibility as individuals and as a team member, with other members and with patients and families

*Applying knowledge and understanding* – Students will have the opportunity to rotate in Neurology and Neurosurgery wards, Stroke unit, outpatient clinics, Neurophysiopathology Unit (EEG, EMG, Evoked Potentials), Neuropsychology Unit and Neuroradiology. Students are required to:

- observe patient interview
- independently obtain and present a complete neurological history
- observe neurological examination
- independently perform neurological examination
- present and document patient case both in neurology and in neurosurgery
- write patient note both in English and in Italian

*Making judgements* – The students will develop abilities to hypothesize and propose a clinical diagnosis, to elaborate a reasoning on possible differential diagnoses and consequently to suggest the most appropriate clinico-diagnostic studies.

*Communication skills* – The students will learn to communicate and explain diagnostic hypotheses, diagnostic steps, diagnosis and prognosis and clinical-therapeutic decisions. They also will learn to interact with the patients taking in the right consideration their complains and their opinions on the clinical care. The students will also acquire the competences to discuss cases in the context of multidisciplinary teams.

*Learning skills* - The students will learn to keep up-to-date, to autonomously review and discuss relevant clinical literature on specific neurological problems.

#### 5. PREREQUISITES

The students are requested to have basic knowledge of anatomy, physiopathology, pharmacology and the most common disorders in clinical medicine. As a general prerequisite, the students must have passed the exams of the previous years.

#### 6. teaching methods

Classroom Lectures, Self-learning, problem-based learning, group practical activities.

*Knowledge and understanding* – During classroom lectures the students will have direct interaction with the teachers and they will be stimulated to ask questions for a better comprehension of the taught topics and to answer questions on the content of the lesson.

*Applying knowledge and understanding* – Either in class or during the professional training, the students will be invited to express their opinions, doubts, hypotheses. With the opportunity to rotate in the different fields, they will be able to gain enough knowledge to mature their own ideas in an integrated multidisciplinary context.

*Making judgements* – Either in class or during the professional training, the students will be stimulated to actively participate in problems solving and clinical management of real cases, even directly interacting with the patients.

*Communication skills* –The students will learn how to communicate with the patients, using a clear and comprehensible language. They will also be encouraged to present and discuss real clinical cases using the most appropriate language in the specific, medical or scientific, contest.

*Learning skills* – The students will be requested to develop and expand their knowledge by studying not only on provided didactic material and suggested textbooks, but also by consulting web available sources (i.e. pubmed, UpToDate, etc...). The students will learn how to integrate the theoretical knowledge in the real medical life.

## 7. other informations

Professors receive students after their scheduled lessons or by appointment obtained by writing an email.

## 8. methods for verifying learning and for evaluation

The exam is oral and focuses on topics related to all five disciplines (modules). The questions are related to the contents of each didactic module and proportional to the number of CFU/hours. The student must pass the exam in each discipline. The final grade is obtained on the basis of the weighted average. To obtain the maximum score (cum laude) the student must have achieved 30 in all five disciplines.

The oral exam will allow to verify

- theoretical knowledge and understanding of the various topics
- ability to apply knowledge by discussing clinical cases, differential diagnosis, therapeutic hypotheses. This part is also integrated during the professional training activity
- ability to make judgments in the discussion of clinical cases or regarding different points of view in clinical matters
- communication skills by evaluating the aptitude to present in an organized manner and illustrate a topic in all its main aspects
- learning skills: during the lessons students are encouraged to autonomously integrate their knowledge by consulting PubMed materials and other web sources. With the oral exam, students can demonstrate their capacities in a topic of their choice.

## 9. program

### **Neurology**

Approach to the patient with neurologic diseases  
Neuropsychology and cognitive functions  
The neurology of aging  
Dementia and related disorders  
Disorders of motility  
Cerebellar syndromes  
Parkinson disease and related disorders  
Chorea and dystonia  
Diseases of spinal cord  
Diseases of motoneurons  
Diseases of peripheral nerves  
Principle of clinical myology  
Muscular dystrophies and related disorders

Mitochondrial Myopathies  
Inflammatory Myopathies  
Paraneoplastic syndromes  
Myasthenia gravis and related disorders  
Cerebrovascular diseases  
Headache and pain  
Multiple sclerosis and related disorders  
Acquired metabolic disorders of the Nervous System  
Encephalitis  
Neurophysiology of Central Nervous System  
Neurophysiology of Peripheral Nervous System  
Epilepsy and disorders of consciousness

### **Neurosurgery**

Historical aspects of Neurosurgery and Physiopathology of the intracranial system  
Clinical examination of the nervous system and correlative neuroanatomy  
Diagnostic tests: CSF examination, electrodiagnostic test, CT, MRI, DSA, PET  
New tools in Neurosurgery  
Hydrocephalus and its treatment  
Gliomas and metastatic brain tumor  
Cerebellopontine angle tumors and posterior fossa tumors  
Sellar and parasellar tumors  
Meningiomas and tumors of the scalp and skull  
Spinal tumors, epidermoid and dermoid tumors, tumors in the region of pineal gland  
Adjunctive therapy of the CNS tumors  
Intracranial aneurysms  
Vascular malformation and fistulas (cerebral and spinal)  
Trauma (biomechanics, pathophysiology and neurological evaluation)  
Traumatic intracranial hematomas and spinal trauma  
Intervertebral disc disease and other spinal disorders  
Pain and its therapy (trigeminal neuralgia, chronic intractable pain)  
Epilepsy surgery  
Disorders of peripheral nervous system  
Developmental anomalies: cranial and spinal disraphism  
Chiari malformations, intracranial arachnoid cysts, Dandy-Walker Syndrome  
Craniosynostosis and hydrocephalus  
Translational research in Neurosurgery

### **General principles of neuroradiology**

General principles of Neuroradiology  
Cerebrovascular diseases  
Dementia and other neurodegenerative disorders  
Multiple sclerosis and related disorders  
Brain tumors  
Trauma

### **Psychiatry**

Principles of general psychopathology  
The psychiatric examination  
Nosology in Psychiatry  
Diagnostic issues in Psychiatry  
Schizophrenia spectrum disorders  
Other psychotic disorders  
Depressive disorders  
Bipolar disorders  
Anxiety disorders  
Somatic symptom and related disorders  
Dissociative Disorders  
Trauma and stressor-related disorders  
Addictive disorders and substance-related disorders  
Eating disorders  
Obsessive-compulsive and related disorders  
Disruptive, impulse control and conduct disorders  
Psychosexual and Personality disorders

Pharmacotherapy in Psychiatry  
Psychotherapy in Psychiatry  
Rehabilitation and community Psychiatry

**Clinical Physiology I**

The neural correlates of high order brain functions and their alterations in neurological diseases:

- motor control;
- attention and executive functions;
- decision making;
- brain rhythms, sleep and wakefulness;
- learning and memory;
- harnessing neuroplasticity for clinical applications