Medicine and Sugery degree course
Integrated Course: **NEUROLOGICAL SCIENCES**
Number of Credits: **6 ECTS**

Module: **Neurology**
SDS MED/26
Number of Credits: **4 ECTS**
Professor Alessandro Stefani (Coordinator)
email: alessandro.stefani@unicamillus.org; stefani@uniroma2.it
https://www.unicamillus.org/personnel/stefani-alessandro/

Module: **Neurosurgery**
SDS MED/27
Number of Credits: **2 ECTS**
Professor Luigi Rigante email: luigi.rigante@unicamillus.org

PREREQUISITES
It would be desirable that the student has already acquired the basic notions on Neuroanatomy and Neurophysiology.

LEARNING OBJECTIVES
We propose an integrated course aimed at translating from basic to clinical knowledge.
This interdisciplinary course will bridge different subspecialties into an integrated and comprehensive program. By completion of the program, students will have adequate knowledge of the main neurological diseases, their pathophysiology and treatment. The Neurosurgery module provides an overview on neurological diseases and of their surgical management. It integrates will diagnostic procedures and technological advancements.
Together with the knowledge of the main neurological diseases (in order to identify and guide therapeutic choices), this course will provide skills: to acquire the basis of neurological semeiotics; to get confidence on instrumental and biochemical diagnostic elements (CSF analysis; imaging interpretation, etc.); to obtain the essential rudiments for understanding the role of genetics and molecular biology in neurological diseases. In additionthe medical students will get the experience able to handle modern neurology, in forms of seminar, dealing with:
I. The evolution of neurology.
II. Neurology in the multi-morbidity of the elderly.
III. Brain death: ethical and legislative aspects.
IV. Is the brain a network? The default systems, the mirror neurons.
V. The neurologist and pandemic infections; from HIV to SARS-2.
VI. Experimental trials and neuroprotective strategies.

LEARNING OUTCOMES

At the end of the course the student must be able to know the basic directions of diagnosis and therapy of the main pathologies of the central SN of neurological interest; besides, he/she will acquire the basic competence to deal with neurological emergencies and to utilize the key semeiotic tools. Further, he/she will be capable to address properly the anatomo-physiological-clinical correlations, which lead to proper diagnosis and therapy path. Also, the student should be able to diagnose and know the treatment of the main CNS and PNS diseases of neurosurgical interest, such as: hydrocephalus and intracranial hypertension syndrome, head and

spine trauma, ischemic and hemorrhagic stroke, cerebrovascular malformations, brain and spinal tumors, spinal degeneration disease, CNS and spinal infections in neurosurgery, pediatric neurosurgical pathologies, peripheral neurosurgical diseases, functional neurosurgery. Neuroanatomy and neurophysiology of neurosurgical interest will be also reviewed.

NEUROLOGY SYLLABUS

At the end of the Neurology course, any candidate will acquire competence around the amin neurological diseases, including: epilepsy; headache; stroke; neuro-inflammatory diseases including multiple sclerosis; infections of the nervous system; spinal cord diseases; diseases of the cerebellum, including ataxias; Parkinson's and Parkinsonisms; dementias; dystonia; myasthenia; muscular dystrophies and other myopathies; diseases of the motor neuron; inflammatory, metabolic, toxic and hereditary mono- and poly-neuropathies; headaches / migraines; sleep disorders; alterations of consciousness, syncope, coma, brain death.

NEUROSURGERY SYLLABUS

The main pathologies of the CNS or peripheral nervous system will be discussed: hydrocephalus and intracranial hypertension syndrome, head and spine trauma, ischemic and hemorrhagic stroke, cerebrovascular malformations, brain and spinal tumors, spinal degeneration disease, CNS and spinal infections in neurosurgery, pediatric neurosurgical pathologies, peripheral neurosurgical diseases, functional neurosurgery. ischemic and hemorrhagic stroke.

COURSE STRUCTURE

The course is divided into lectures, divided between 40 hours of neurology and 20 hours of neurosurgery. Professors will use teaching tools such as slides with explanatory diagrams, illustrations and images. Films and animations will be used to integrate the processes described in class.
Interactive tests will be organized.
Attendance is compulsory.

COURSE GRADE DETERMINATION

The evaluation parameters that will be used, among others, will be: ability to gather and organize knowledge; critical thinking skills; quality of exposure, competence in the use of specialized vocabulary, effectiveness, linearity). It is required a good performance in the written text that precedes the oral exam. The examination will include, at first, a written test. The last is composed by 20 multiple choices questions and 2 brief free topics. Each valid answer to the 20 questions has the value of 1 ; the free topic requires a brief effective written explanation, each one representing 5 points. Hence, overall, 30/30. Only candidates reaching at least 18/30 will gain access to the oral exam. Furthermore, it should be noted that the multiple choice questions will focus on both disciplines of the course, yet respecting the distribution of the ECTS (in the ratio 2:1); hence, 13/14 neurology questions; 6/7 neurosurgery questions. For the two brief topics, the commission, composed of the two colleagues, will decide on shared themes, for each session.
Finally, it is conceived that, for esamination sessions proposing 3 or less candidates, the examination will be transformed in a mere, but solid, oral session.
The whole examination will be evaluated as it follows:

➢ Insufficient: severe poor knowledge of the subject, very limited skill in the analysis of specific items.
➢ 18-20: knowledge of the subjects of sufficient quality characterized by frequent imperfections. Analysis and reasoning skills of sufficient quality.
➢ 21-23: standard knowledge of the specific subject; analysis and reasoning skill of acceptable quality.
➢ 24-26: good knowledge of the subjects and good analysis and reasoning skills; arguments are expressed in a rigorous way.

➢ 27-29: very good knowledge of the specific scientific subjects, valid analysis and reasoning skills, significant skill in making judgements.
➢ 30-30L: outstanding knowledge of the specific knowledge of the scientific tasks. Exceptional analysis, reasoning and making judgments skills.

OPTIONAL ACTIVITIES
Extra sessions and Interactive tests may be organized to deliver additional information on-line. Furthermore, one of the extended lessons (3 hours) will be presented in the form of a seminar with in-depth analysis of research topics (including the invitation to competent field experts).

NEUROLOGY READING MATERIALS
Updated neurology tests such as the Bergamini (ed. Universo); or the Neurology of Cambier et al. Optional: Principles of Neural Sciences, Kandel et al.

However, the key concept is that the training of the medical students will also benefit from the material provided by the teacher. Prof Stefani will solicit and provide insights with numerous references to modern updated reviews or videos easily accessible on the web; this permits the sharing of neurological semeiotics in a more effective manner, which represents a crucial knowledge necessary for any specialist (with particular reference to those who will work in the emergency room and / or emergency services).

NEUROSURGERY READING MATERIALS

Handbook of Neurosurgery, 10th Edition by Mark S. Greenberg

Comprehensive Neurosurgery Board Review, 3rd Edition by J.S. Citow

Spine Essentials Handbook: A Bulleted Review of Anatomy, Evaluation, Imaging, Tests by K. Singh