UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Neuroscienze Cognitive in Ambito Clinico

2627-2-F5110P012

Learning area

Methods and tecniques for treatment and rehabilitation

Learning objectives

Knowledge and understanding

- Adaptive and maladaptive plasticity
- Psychobiology of homeostasis
- Elements of Psycho-neuro-endocrino-immunology
- Chronic disruptions of homeostasis and mind-body relationship (stress, trauma, chronic pain)

Applying knowledge and understanding

- Knowledge about the relationship between brain functions and body homeostasis, in the normal and pathological behavior
- Acquisition of knowledge useful in a heuristic and rehabilitative framework
- Ability to design diagnostic and rehabilitative projects using the knowledge acquired

Making Judgements

- Students will be guided into analysing relevent literature and prepare an essay and a presentation by choosing topics, methods and bibliography accrding to the importance of ceeting scientific standards and critical thinking renforced during the course.

Communication skills
The course provides a preparation related to the methods of research and presentation of research projects, which

students will be able to put into practice by preparing their presentations and illustrating them to the class.

Learning skills
During classroom lessons, contributions from external experts and the preparation of personal papers, students will acquire working and research methods that can become operational models to contribute to their ability to learn information in their future.

Contents

- Functional and dysfunctional brain plasticity
- Brain representation of pain, biopsychosocial aspects of chronic pain
- Body self-representation in health and disease
- Neurobiological mechanisms of homeostasis, fundamentals of psycho-neuro-endocrino-immunology as a paradigm for homeostatic balance and health
- Neuroscience of mind-body interaction: influence of mental states on the immunitary, cardio circulatory, gastrointestinal systems
- Neurobiological effects of complementary therapies

Detailed program

- Degenerative brain processes, plastic and maladaptive brain plasticity
- Psycho-neuro-endocrino-immunology in the homeosasis
- Body and self-representation in the intact and dysfunctional brain
- Physiopathology of acute and chronic pain: biopsychosocial approaches in the treatment of chronic pain
- Neurobiology of placebo effect and its importance as a model of clinical interaction
- Disruption of mind-body balance (stress, psychological trauma, immunitary, cardiocirculatory and gastrointestinal functions); the psychoneuroendocrinological model
- Neuroscientific approach to integrated therapies in the domain of neuropsychology (mirror box), neurophysiology (brain stimulation, biofeedback, neurofeedback), and behavioral interventions (meditation, clinical hypnosis)

Prerequisites

Basic knowledge about anatomy and physiology of the central nervous system

Teaching methods

Traditional class lectures in Italian will be completed by seminars with a practical orientation, during which students and teacher will discuss about given issues related to the course, together with experts in the field.
Students will be also guided through the preparation of group projects on diagnostic and therapeutic procedures related to the topic of the course, which will be also presented to the whole class and critically discussed. This aspect of the course aims at stimulating critical soft skills necessary to the preparation and presentation of innovative diagnostic or interventional projects based on a solid scientific background.

Assessment methods

The examination is complemented by an open-ended question designed to assess students' ability to integrate neuroscientific knowledge with clinical applications and to present complex topics in a clear, well-structured, and coherent manner.

The final assessment also takes into account the work carried out in the preparation and presentation of the group projects.

Grades reflect the level of knowledge acquired, the ability to apply this knowledge, and the appropriate use of technical terminology. The latter is assessed through the open-ended questions in the examination and through each student's individual presentation of the group project.

The final grade is based on the overall score achieved across the different sections of the examination, according to the following grading scale:
18: Barely sufficient knowledge; minimal ability to apply the acquired knowledge.
19–22: Sufficient knowledge of the fundamental content, with some uncertainty in its application.
23–26: Fair knowledge; good ability to apply the acquired knowledge, with some inaccuracies.
27–30: Solid knowledge; good to excellent mastery of the subject matter and critical thinking skills.
30 with honours: Comprehensive knowledge; excellent ability to apply the acquired knowledge; outstanding command of technical and academic language.

No midterm assessments are scheduled.

Erasmus students are invited to contact the course instructor to discuss the possibility of studying from an English-language reading list and/or taking the examination in English.

Textbooks and Reading Materials

Detailed information about reading material will be given on course start, and published on the course webpage.

Sustainable Development Goals

GOOD HEALTH AND WELL-BEING