UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Cognitive Neurosciences in The Clinical Practice

2122-2-F5104P021

Learning area

Methods and tecniques for treatment and rehabilitation

Learning objectives

Knowledge and understanding

- Adaptive and maladaptive plasticity
- Psychobiology of homeostasis.
- 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.

Contents

- Functional and dysfunctional brain plasticity. Brain representation of pain, biopsychosocial aspects of chronic pain.
- Neurobiological mechanisms of homeostasis, stress and trauma.

- 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.
- 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 (yoga, meditation, clinical hypnosis).

Prerequisites

Basic knowledge about anatomy and physiology of the central nervous system

Teaching methods

Traditional class lectures 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.

Lectures will be held in presence, unless COVID-19- related resctrictions are imposed

Assessment methods

Written examination with multiple-choice questions, aimed at assessing the acquisition of basic notions, and an essay, aimed at assessing the ability of exposing more complex topics in a synthetic but informative way.

The overall assessment will take into account the optional group projects prepared and presented by the students during the course.

Erasmus students can contact the teachers in order to obtain bibliography in English and/or organize exams in

English language.

Textbooks and Reading Materials

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