# Neurosciences and Well-being in the Lifespan

## Prof. Michela Balconi

***COURSE AIMS AND INTENDED LEARNING OUTCOMES***

The aim of the course is to teach students certain theoretical and methodological aspects of neuropsychology and the neuroscience, studying both subjective and intersubjective well-being across the lifespan. More specifically, the main *emotional and cognitive processes* will be explored from the dual perspective of *empirical research* and analysis of *clinical-rehabilitation* contexts. Special attention will focus on studying psycho-physiological conditions and factors that help to maintain and reinforce well-being. The course will then focus on assessment and diagnostic procedures for studying neuropsychological deficits in stressful environments, as also the application of new *tools* (EEG, TMS, TDCS, neuro feedback, fNIRS) and *methods* for recovering emotional and cognitive functions throughout the lifespan, also with a focus on pathological conditions.

*Intended learning outcomes*

At the end of the course, students will be able to *acquire new skills and understand* the key models and tools applied to the neuroscience of well-being. Students will be able to examine and describe the main approaches of neuroscience and well-being, formalise research plans and intervention within clinical and applicative areas of the life span. Students will also be able to extend such knowledge to the main sectors of intervention, rehabilitation, and boosting of mental functions in a critical way and with a high degree of autonomy. The intended learning outcomes for this course will also include the development of *communication skills*, consisting in the ability to use oral and written forms of communication to transmit the newly-acquired knowledge and skills, the learning of new methodologies of analysis and new possible applications, integrated by *critical communication skills*, consisting in the ability to assess the interventions and their relative analytical methodologies on a scientific basis*.*

***COURSE CONTENT***

The course will be divided into two different modules.

Module 1

The first part of the course will look at the main issues related to *theoretical models* and neuroscientific methods associated with well-being, mainly focusing on supplementary neuroscientific approaches for clinics, laboratory research and field work. The various phases of research will be explored based on a study of *intervention protocols* related to subjective and intersubjective well-being, concentrating on psycho-physiological and neuro-psychological dynamics capable of defining the necessary conditions for maintaining and reinforcing functional adaptation.

Module 2

The second module of the course will take a more specific look at the relationship between the neuroscience and certain specific fields, such as the dynamics associated with cerebral plasticity, supporting optimum emotional behaviour, the supportive conditions of *social neuroscience* and *networking* during developmental age and adulthood, and supporting/reinforcing in physiological ageing. A specific focus will be on the relationship between neuroscientific protocols, substance and behavioural addictions and prevention. Both parts of the course will provide applications for *empirical* purposes (laboratory experiments) and *clinical neuropsychology* (studies of clinical cases), also thanks to the help of experts in the sector.

***READING LIST***

a. M. Balconi, *Neuroscienze delle emozioni ,* Franco Angeli, 2020.

b. Berridge-Morten-Kringelbach (2011), *Building a Neuroscience of pleasure and well-being.,*Psychology of Well-being, 1-26.

***TEACHING METHOD***

The course will be taught in lectures, also discussing clinical cases based on clinical and research protocols and using audio-visual aids. Methodological aspects will be studied in greater depth during a special series of practical lessons about neuro-psychological (including applications on devices) and psychometric tools (neuropsychological tests), mainly focusing on clinical, behavioural, and rehabilitation neuropsychology. There will also be seminars held by experts in experimental and clinical neuroscience of well-being.

***ASSESSMENT METHOD AND CRITERIA***

Students will be assessed on two different levels:

– a written paper (based on research or clinical work) examining one of the topics studied during the course in greater depth. This level of evaluation will help verify the student’s acquisition of skill in designing a research/intervention protocol. The assessment criteria will be based on the appropriateness of the contents exposed, the coherence of the structure, the correctness of the methodology, and the adoption of a critical approach towards the topics under analysis.

– an oral test integrated with the written test. Students will be assessed on their acquisition of the main clinical models, approaches and research regarding neuroscience and well-being, on the basis of their ability to present the topics in a coherent and complete way, and reinterpret them from a critical perspective.

The final mark will consist of the average of the two tests (50% for each).

***NOTES AND PREREQUISITES***

There are no prerequisites for attending the course. However, students should have a basic knowledge of cognitive neuroscience.

In case the current Covid-19 health emergency does not allow frontal teaching, remote teaching will be carried out following procedures that will be promptly notified to students.

Further information can be found on the lecturer's webpage at http://docenti.unicatt.it/web/searchByName.do?language=ENG, or on the Faculty notice board.