UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Neuro-Functional Basis of Cognitive and Affective Processes

2425-1-F5108P009-F5108P010M

Learning area

Applied Experimental Psychological Sciences

Learning objectives

Knowledge and understanding

. Knowing the cognitive, neurobiological and functional bases of social and affective mental processes.

. Understanding the genesis and dynamics of alterations and disorders of cognitive, communicative, emotional-motivational and social activity.

Applying knowledge and understanding

• Acquisition of the ability to apply the acquired knowledge in order to design and carry out empirical studies in the field of social and affective neuroscience.

• Acquisition of the ability to apply the acquired knowledge in order to personally design and carry out clinical interventions focused on specific patients with socio-affective disorders.

Contents

This course provides essential knowledge concerning the main cognitive models and the neurophysiological bases of social and emotional-motivational processes in humans, in order to promote the understanding of socio-

emotional and behavioral functions, both in healthy people and patients with specific social or affective disorders.

Detailed program

1. The Mirror Neuron System: action coding, affordance, rolandic mu rhythm, embodied simulation, McGurk effect
2. Audio/visuomotor neural representation of musical gestures
3. Social brain: face, gaze and gesture processing, biological motion
4. Sex difference in the social brain: face processing, negative affect, pareidolia, empathy for pain, parental behavior
5. Moral deficits in neurological and psychiatric patients
6. Antisocial personality disorders: sociopathy
7. Orbitofrontal cortex and the moral brain (altruism, cooperation, equity, justice, guilt, shame)
8. The development of morality in humans and primates
9. Theory of Mind, mentalization, false beliefs, TOM humor
10. The neural representation of Self, Close and Other
11. FMRI, connectivity and eye-tracking evidences of functional abnormalities in ASD individuals
12. The default-mode network
13. Other-race effect, social prejudices and stereotypes

Prerequisites

This course requires a basic knowledge of anatomy and physiology of the nervous system and its cognitive functions.

The understanding of textbook and scientific article in English.

Teaching methods

Frontal lessons in English with slides and audio/video presentations. Presentation and discussion of ongoing data and research articles.
(a) nature of teaching: dispensing and interactive
(b) type of teaching activity: lecture
(c) hours possibly delivered remotely = none (except for emergency)

Assessment methods

The exam is only written.
The written exam consists in short essays (exposition of topics covered in class and described in study material/book chapters).

Textbooks and Reading Materials

From the handbook, which is online and with open access: “Social and Affective Neuroscience of Everyday Human Interaction - From Theory to Methodology”, Springer Nature, Boggio et al. (2022).
Part 2. Social Neuroscience and Moral Emotions
Chapter 5. AM Proverbio, A Zani Mirror neurons in actions…ERP and neuroimaging evidences
Chapter 6: AM Proverbio Sex differences in social cognition
Part 4. Methods used in Social and Affective Neuroscience
Chapter 12: AM Proverbio EEG and ERPs in the study of Language and Social Knowledge

2. Gazzaniga M.S., Ivry R.B., & Mangun G.R. (2019). Cognitive Neuroscience. New York: Norton (ONLY **Chapters 13 & 14)**.

Lesson slides will be provided during the course and uploaded on the appropriate E-learning web page.

Sustainable Development Goals

GOOD HEALTH AND WELL-BEING | GENDER EQUALITY