# Specialist module with workshop: Digital health and telemedicine techniques for prevention and care

## Dr. Maria Cotelli

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

*Course aims*

The course aims to provide theoretical and methodological elements related to the main digital health, telemedicine, and neuromodulation/neurostimulation technologies for the promotion of cognitive empowerment and well-being, from a supplementary and practical perspective.

In particular, it aims to introduce the most important smart technologies, the neurostimulation/neuromodulation and telerehabilitation methodologies, and new care models oriented towards health promotion and continuity of care, according to a double perspective of empirical research and clinical context analysis.

In addition, the course will be focused on the application of cognitive telerehabilitation in association with neuromodulation/neurostimulation.

Furthermore, it aims to carry out an in-depth analysis of the contents and methods of digital health technologies, telemedicine, and non-invasive brain stimulation in the treatment of cognitive disorders.

The different steps of research will be explored starting from the analysis of the neuropsychological rehabilitation protocols based on the combined application of digital medicine, cognitive training, and non-invasive transcranial neurostimulation/neuromodulation techniques on patients with neurological disorders and individuals showing age-related physiological changes.

*Intended learning outcomes*

*Knowledge and Understanding*

The course aims to provide for students and basic knowledge of the theoretical assumptions and the practical applications of the main digital health and telemedicine technologies, as well as the neuromodulation/neurostimulation methodologies for the promotion of cognitive empowerment and well-being.

*Ability to apply knowledge and understanding*

At the end of the course, students will be able to plan and evaluate an intervention for the promotion of cognitive empowerment and well-being using specific methodologies. Furthermore, they will get a basic understanding of the application of neuromodulation/neurostimulation techniques and the main digital health and cognitive telerehabilitation technologies for the management and planning of multidisciplinary projects in the field of digital health.

***COURSE CONTENT***

The course aims to explore the application of neuromodulation and neurostimulation techniques and the main digital health and cognitive telerehabilitation technologies for the promotion of cognitive empowerment and well-being. In particular, it will analyse the following topics:

Unit 1:

* An introduction to the innovative interventions in the field of neuropsychology;
* Digital health applied to the rehabilitation of cognitive disorders;
* Telerehabilitation and devices;
* Neuropsychological rehabilitation;
* Technology in the rehabilitation process: instructions, limits, and perspectives;
* An outline of the origins of non-invasive brain stimulation techniques;
* Basic principles and mechanisms of action;
* Neuroplasticity, transcranial Direct Current Stimulation (tDCS), and Transcranial Magnetic Stimulation (TMS);

Unit 2:

* Rehabilitation Assessment and Intervention;
* Neuropsychological assessment tools, clinical scales, and batteries;
* Analysis and promotion of the study of the strategies and techniques adopted in the field of digital health;
* Design and planning of treatments for the empowerment and rehabilitation of cognitive deficits;
* The application of telemedicine to neuropsychological rehabilitation;
* Digital health, telerehabilitation, technological devices, non-invasive brain stimulation techniques, prevention, and health promotion;
* Presentation and discussion of clinical cases and the protocols applied.

***READING LIST***

Chapters I, II,III, XV, XVI, of the textbook *Teleriabilitazione e ausili. La tecnologia in aiuto alla persona con disturbi neuropsicologic i*edited by A. Cantagallo; ed. Franco Angeli, 2014.

In addition, further teaching material will be made available on Blackboard.

***TEACHING METHOD***

The course will include frontal lectures (held in class), the discussion of clinical cases, and the presentation of innovative prevention and treatment programmes for the promotion of cognitive empowerment and well-being.

***ASSESSMENT METHOD AND CRITERIA***

The assessment of the students’ acquisition of the intended learning outcomes will be based on the writing of a paper (clinical intervention project) and its oral presentation (to be carried out individually or in small groups), with a focus on one of the topics introduced during the course.

Students will be asked to plan an intervention based on the application of the techniques and methodologies explained during the course and aimed at the promotion of cognitive empowerment and well-being, and present the results taking into account the theoretical models. The assessment criteria will include the use of the theoretical tools, the rigorous application of the selected methodology, the use of an appropriate terminology, and the ability to use argumentation to expose the results described in the project proposal.

***NOTES AND PREREQUISITES***

*Prerequisites*

Students should have a basic knowledge of neuropsychology. Furthermore, students will be allowed to contact the lecturer in order to get further information on the reading list, according to their needs.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.