Advanced training courses of the

PhD program in Neuroscience

2019/2020

Academic year 2019/2020

Titles and syllabi of the advanced training courses of the PhD program in Neuroscience

(to be added to the training courses of the Doctoral School)

The courses are indipendent and cross-curricular. PhD students can arrange their own schedule according to their personal interests and background.

To sign up for the courses, please follow the instruction provided by e-mail or contact dottorato.neuroscience@unimb.it if you are not a student of the PhD program in Neuroscience.

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1. GENETIC BASES OF INTELLECTUAL DISABILITY

Teacher (name and affiliation)	**Angela Bentivegna** (Università degli Studi di Milano Bicocca)
Title	**Genetic bases of intellectual disability**
Language	English
CFU	1
Hours	8
Program	To give a comprehensive overview of genetic abnormalities that cause or contribute to intellectual disability (ID). Objectives of the course are: (a) known genetic causes of ID; (b) the divergent neurodevelopmental phenotypes associated with mutations in some genes; (c) the inheritance patterns observed for the susceptibility to ID, including highly penetrant Mendelian patterns, oligo/polygenic modes of transmission, and sporadic cases due to de novo mutations.
Evaluation: YES/NO	YES
Calendar	May-June 2020. The course will be activated with a minimum of 4 participants

2. GLIAL CELLS IN HEALTH AND DISEASE

Teacher (name and affiliation)	**Anna Maria Colangelo** (Università degli Studi di Milano Bicocca)
Title	**Glial cells in health and disease**
Language	English
CFU	1
Hours	8
Program	To give a comprehensive overview of the role and function of glial cells in brain function. Objectives of the course are: Brain metabolism and neuro-metabolic coupling Alteration of glial function in neurodegenerative disorders
Evaluation: YES/NO	YES
Calendar	June 22-23 and 29-30, 2 p.m. – 4 p.m. (can be adjusted if necessary). The course will be activated with a minimum of 3 participants

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3. PATHWAYS, BIOMARKERS AND NEW THERAPIES IN NEURODEGENERATIVE DISORDERS

Teacher (name and affiliation)	**Carlo Ferrarese** (Università degli Studi di Milano Bicocca)
Title	**Pathways, biomarkers and new therapies in neurodegenerative disorders**
Language	English
CFU	1
Hours	8
Program	To present current translational research on pathways and biomarkers for early diagnosis and new targeted therapies , the course will focus on: molecular mechanisms of neuronal damage (protein misfolding, excitotoxicity, oxidative stress, neuroinflammation) biomarkers in patients new therapeutic trials based on biomarkers
Evaluation: YES/NO	YES
Calendar	June 2020

4. BASIC CONCEPTS IN NEUROINFLAMMATION

Teacher (name and affiliation)	**Maria Foti** (Università degli Studi di Milano-Bicocca)
Title	**Basic Concepts in Neuroinflammation**
Language	English
CFU	1
Hours	8
Program	In this course, the diverse and complex interactions between the brain and the immune system from the perspective of current, cutting-edge research papers will be explored. The course will provide an extensive knowledge of the role of inflammation in nervous system health and disease. Inflammation is involved in many central nervous system (CNS)-regulated physiological processes (including energy balance, sleep, memory and synaptic plasticity), and is a key host defence response to acute and chronic peripheral and central disorders. Research into neuroinflammation is a major field that aims to develop new therapeutic interventions to treat all major nervous system disorders including stroke, brain trauma, epilepsy, Alzheimer's disease and neuropathies. This unit will cover the important role of inflammatory molecules as key mediators of CNS functions and will provide basic knowledge on the pathogenesis of, and inflammatory responses to acute and chronic nervous system disorders.
Evaluation: YES/NO	YES
Calendar	June-July 2020 The course will be activated with a minimum of 5 participants

5. FOOD AND BRAIN: YIN AND YAN

Teacher (name and affiliation)	**Paola Palestini** (Università degli Studi di Milano Bicocca)
Title	**Food and brain: Yin and Yan**
Language	English
CFU	1
Hours	8
Program	In this cycle of seminars will be presented: • The principle of heath nutrition • The relation between food and SNC development • The good food for nervous system • The bad food for nervous system
Evaluation: YES/NO	YES
Calendar	To be determined according to the overall teaching plan. The course will be activated with a minimum of 5 participants

6. THE CONCEPT OF STAMINALITY IN NEUROSCIENCE

Teacher (name and affiliation)	**Arianna Scuteri** (Università degli Studi di Milano Bicocca)
Title	**The concept of staminality in neuroscience**
Language	English
CFU	1
Hours	8
Program	To clarify the "stemness" concept for the Nervous System and to explore the stem cell potential for research and therapy, the following topics will be addressed: • The stem cell features • The stem cells in the Nervous system: neurogenesis • Methods to potentiate endogenous neurogenesis From stem cells to neurons: therapeutic approaches.
Evaluation: YES/NO	YES
Calendar	September 2020 The course will be activated with a minimum of 6 participants

7. NEUROGENETICS

Teacher (name and affiliation)	**Lucio Tremolizzo** (Università degli Studi di Milano-Bicocca)
Title	**Neurogenetics**
Language	English
CFU	1
Hours	8
Program	With the purpose of learning principles of neurogenetics, i.e. genetic applied to neurological and psychiatric disorders, the corse will address the following topics: Principles of genetics applied to the field of neuroscience Behavioral and cognitive phenotypes Motor phenotypes I (strength) Motor phenotypes II (quantity/quality of movement)
Evaluation: YES/NO	YES
Calendar	To be determined according to the overall teaching plan. The course will be activated with a minimum of 3 participants

8. BEHAVIORAL TEST IN PRECLINICAL NEUROSCIENCE

Teacher (name and affiliation)	**Gianfranco Caselli** (Rottapharm Biotech)
Title	**Behavioral test in preclinical neuroscience**
Language	English
CFU	1
Hours	12
Program	The aim of this teaching activity is to introduce those students without this background to the basics of behavioral testing in vivo using animal models, focusing on these topics: Understanding the basis of behavioral testing in animals Observing the application of behavioral testing in healthy animals Observing the application of behavioral testing in animal modles of neuropathic pain
Evaluation: YES/NO	NO
Calendar	April-May 2020. The course will be activated with a minimum of 2 participants and is limited to a maximum of 5 participants.

9. META-ANALYSES IN NEUROSCIENCES: AN INTRODUCTION

Teacher (name and affiliation)	**Giuseppe Carrà** (Università degli Studi di Milano-Bicocca)
Title	**Meta-analyses in neurosciences: an introduction**
Language	English
CFU	1
Hours	8
Program	The aim of the course is to acknowledge basic principles and procedures of commonly used methods for meta-analysis following both PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) and MOOSE (Meta-analysis of Observational Studies in Epidemiology) guidelines. The topics addresses in the course are: Introduction to epidemiology in neurosciences Different measures of association for results synthesis in meta-analysis The publication bias issue Risk of bias and quality assessment
Evaluation: YES/NO	YES
Calendar	To be determined according to the overall teaching plan. The course will be activated with a minimum of 3 participants and is limited to 10 participants

10. DEVELOPMENT OF DIAGNOSTIC METHODS FOR THE EVALUATION OF THE RESPONSE TO TREATMENTS IN PRECLINICAL MODELS OF GLIOMA

Teacher (name and affiliation)	**Silvia Valtorta** (Università degli Studi di Milano-Bicocca)
Title	**Development of diagnostic methods for the evaluation of the response to treatments in preclinical models of glioma**
Language	English
CFU	1
Hours	8
Program	To learn fundamentals of research and diagnostic application of imaging in clinical and preclinical field and to learn role of imaging in the monitoring of therapy response. The program will focus on - Molecular glioma classification - Neuroinflammation and glioma - Creation of preclinical models of glioma - Study of tumor heterogeneity using imaging (PET, MRI) - Use of imaging methods for therapy response
Evaluation: YES/NO	YES
Calendar	May-June 2020

11. NON-INVASIVE BRAIN STIMULATION TECHNIQUES IN COGNITIVE NEUROSCIENCE

Teacher (name and affiliation)	**Leonor Josefina Romero Lauro** (Università degli Studi di Milano-Bicocca)
Title	**Non-invasive brain stimulation techniques in cognitive neuroscience**
Language	English
CFU	2
Hours	16
Program	The mechanism of action of three non-invasive brain stimulation techniques: TMS, tDCS and TMS-EEG The use of TMS, tDCS and TMS-EEG for research purposes in the field of cognitive neuroscience Practical class on tDCS: setting and choosing the stimulation parameters, electrodes montage, electrode positioning according to the 10-20 EEG system. Practical class on TMS: setting and choosing the stimulation parameters, determining the resting motor threshold, using the neuronavigation system to guide coil positioning, Practical class on TMS-EEG: setting and choosing the stimulation parameters, using the neuronavigation system, collecting one session of TMS-Evoked potentials (TEPs), hints on TEPs data analysis
Evaluation: YES/NO	YES
Calendar	December 2019 or June 2020. The course will be activated with a minimum of 5 participants and is limited to 10 participants

12. BASIC MECHANISM OF EPILEPSY

Teacher (name and affiliation)	**Giulio Sancini** (Università degli Studi di Milano-Bicocca)
Title	**Basic Mechanism of Epilepsy**
Language	English
CFU	1
Hours	8
Program	The goal is to equip students with the knowledge they need to understand the fundamental concepts underlying current research in the neurophysiology of central circuits. Lectures will allow students to learn how to identify interesting biological questions and feasible approaches to address the questions. Topics of the course are: experimental work introduces the student to the main electrophysiological research techniques structure and function of ion channels, generation and propagation of action potential, firing properties and physiology of synaptic transmission the hypersynchronous discharge: persistent neuronal changes and circuitry rearrangement
Evaluation: YES/NO	YES
Calendar	June 2020. The course will be activated with a minimum of 2 participants.

13. NEUROPSYCHOLOGY AND DEMENTIAS

Teacher (name and affiliation)	**Ildebrando Appollonio and Collaborators** (Università degli Studi di Milano Bicocca)
Title	**Neuropsychology and Dementias**
Language	Italian
CFU	2
Hours	24
Program	Foundations of Neuropsychology Cognitive Aging and Cognitive Reserve Clinical Interpretation of the Psychometric Evaluation Memory, Amnesic syndromes and Alzheimer's disease Executive functions, Fronto-Temporal Lobar Degenerations and Amyotrophic Lateral Sclerosis Focal and Degenerative Aphasias, the Agnosias and Semantic Dementia Lewy Body Dementia, Cognitive Dysfunction in Parkinson's Disease and Parkinsonisms Alexia and Agraphia, Dyscalculia and Gerstmann's Syndrome, Apraxias and the Mirror Neurons
Evaluation: YES/NO	NO (at least 75% of programmed hour frequency)
Calendar	Monday afternoons 2:30-6:30 pm, starting from January 20. 2020

14. NEUROPSYCHOLOGY AND DEMENTIAS: ADVANCED COURSE

Teacher (name and affiliation)	**Ildebrando Appollonio and Collaborators** (Università degli Studi di Milano Bicocca)
Title	**Neuropsychology and Dementias: Advanced Course**
Language	Italian
CFU	1.5
Hours	20
Program	Visuo-Spatial Deficits, Neglect and Posterior Cortical Atrophy (PCA) The Agnosias: from focal lesions to Semantic Dementia (SD) Neuropsychology of Aging and Cognitive Reserve Cognitive Decline of Cerebrovascular origin: from vascular dementia (VAD) to vascular cognitive impairment (VCI) The Subclinical and Preclinical Phases of progressive cognitive disorders: from full-blown dementia to disease labels (MCI, SCD) Rapidly Progressive Dementias Behavioral and Psychiatric Disturbances (BPSD) in the Dementias Treatment of Non-AD Dementias Current Therapies and Research Trials for Alzheimer's Disease
Evaluation: YES/NO	NO (at least 75% of programmed hour frequency)
Calendar	5 Monday afternoons 2:30-6:30 pm, starting from May 4, 2020. Participants will be admitted till a maximum of 6. First level Neuropsychology and Dementias Course required

15. NEUROPSHYCHOLOGY LAB

Teacher (name and affiliation)	**Ildebrando Appollonio and Dr. Cristina Mapelli** (Università degli Studi di Milano-Bicocca)
Title	**Neuropshychology Lab**
Language	Italian
CFU	1
Hours	12
Program	Practical involvement in neuropsychological approach and research Standard Psychometric Evaluations Draft of NPS Reports Experimental NPS Approaches
Evaluation: YES/NO	NO (at least 75% of programmed hour frequency)
Calendar	Date and Time: To be determined, according to Ph. D. overall teaching plan and NPS Lab availability (from January 2020). A maximum of 4 participants will be admitted to the course

16. PERIPHERAL NEUROPATHIES

Teacher (name and affiliation)	**Guido Cavaletti** (Università degli Studi di Milano Bicocca)
Title	**Peripheral neuropathies**
Language	English
CFU	1
Hours	8
Program	The aim of this teaching activity is to introduce those students without a clinical background in neurology to the neurological examination and to the recognition of signs and symptoms of peripheral nerve damage Understanding the basis of the neurological examination of the peripheral nervous system Assisting to an outpatient clinic activity as observers Reporting in summary the results of a clinical assessment of real patients
Evaluation: YES/NO	YES
Calendar	To be determined according to the overall teaching plan. The course is limited to 3 participants