Teaching program for the PHD in Neuroscience

ADVANCED COURSES

Each student will choose the modules that finds more useful and interesting for her/his research training to complete the required number of hours (minimum: 16 hours).
The classification in curricula is only meant to better cluster methodological skills and knowledge. We strongly encourage the students to broaden their horizon to the different aspects of Neurosciences.

1. Programming and Computational Neuroscience

a. Controllability (4 hours) (Suweis)
b. Basic introduction to Bayesian reasoning (4 hours) (Zanzotto)
c. Data reduction (PCA, ICA) and/or permutation (6 hours) (Finos)
d. Programming in Python (Advanced level. To activate on 20-21)

2.Cognitive and Behavioral Neuroscience

a. Practical course for EEG recording and analysis (8 hours) (Ambrosini)
b. Practical course for transcranial magnetic and electric stimulation techniques (4 hours) (Cona)
c. Systematic review meta-analysis and study quality in neuroimaging (8 hours) (Gentili)
d. Advanced analysis of fMRI data using the General Linear Model (8 hours) (Wouter Weeda)

3.Cellular and Molecular Neuroscience

a. Light-based methods for brain circuit analysis (8 hours) (Dal Maschio, Bortolozzi)
b. Invertebrate nervous system: a way to study higher brain function and their evolution in a simpler (not so simple) nervous system. (4 hours) (Megighian, Cellini; Zordan)
c. Inhibitory interneurons in the neocortex: from cellular properties to circuits (4 hours) (Pietrobon)

4.Translational and Clinical Neuroscience

a. Parkinson's and other movement disorders (4 hours) (Antonini)
b. Motor recovery and neuroplasticity after central nervous system injury (4 hours) (Del Felice)
c. Neurodegenerative disorders (4 hours) (Cagnin)
d. Multiple sclerosis (2 hours) (Gallo)
e. Brain-body interactions in psychopathology and the bio-neurofeedback (6 hours) (Palomba; Messerotti)

The second part of the scheme includes advanced short classes of 2-8 hours, among which the student will choose some. These courses will be focused on the individual research subject of the proposing faculty and have been clustered on the different platforms of the PNC. The courses are conceived to provide, in addition to the theoretical background, the skill to use the concepts/tools in the research project of the students but should also be considered as an opportunity explore areas that are not directly related to the student background or research project.