Bordeaux Neurocampus Graduate Program

Université de BORDEAUX

« Introduction to structural and functionnal imaging in Human» 3 ECTS

Emmanuel Mellet, Laure Zago

emmanuel.mellet
@u-bordeaux.fr

laure.zago
@u-bordeaux.fr

1. Learning Objectives

This teaching proposes an introduction to the functional and structural imaging methods in humans, using magnetic resonance imaging. It also presents the most significant results obtained with this technique in the main domains of cognitive neuroscience. The aim is to offer an overview of what neuroimaging can provide to understand brain functions.

2. Topics

Neuroimaging: methods and measures

- MRI of grey matter: Voxel-based morphometry, cortical thickness, cortical surface
- White matter MRI: diffusion imaging, tractography
- Functional activation MRI: paradigms and analysis
- Resting-state functional MRI: functional connectivity

Neuroimaging: applications

- Models of brain functions
- Lifespan structural changes of the brain
- Neuroimaging brain evolution
- Neuroimaging of language, visual perception and attention

3. Teaching

- Formal in class lecture and recorded tutorial

4. Examination

A one and a half hour written session of focused questions based on the information provided in class.

5. Speakers/topics

- Fabrice Crivello : Neuroimaging of grey matter
- Isabelle Hesling: Langage
- Gaël Jobard : Language
- Marc Joliot : Functional connectivity
- Emmanuel Mellet : Paradigms in fMRI, visual perception
- Michel Thiebaut de Schotten : White matter, models of brain functions, brain evolution
- Laure Zago : Networks of attention