Bordeaux Neurocampus Graduate Program

Université de BORDEAUX

« Introduction to Data Analysis for Neuroscience »
3 ECTS

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As Neural Data become more and more complex

➔ Neuroscientists rely increasingly on *computational tools for data analysis*

1. Learning Objectives :

i. Brush up or update the *maths and/or computer science background* for *basic data analysis*.

ii. Get familiar with *basic techniques* for *data analysis* using the *Python* language.

2. Topics :

Linear Algebra; Signal Analysis; Computational neuroscience; Programming; Scientific Python

3. Teaching :

- **Lectures on the theoretical background and basic concepts**
- **Exercices (homework) to get familiar with the new concepts and techniques**
- **Mini-projects: analysis of real-world experimental data**

4. Examination

Continuous : 3 grades based on exercises + the mini-projects outcome (format of a scientific article, 1-2p max.)

5. Speakers/topics

Introduction to Python, Numpy, Scipy; Data visualization; Signal processing; Introduction to linear algebra;
Mini-project 1: analysis of bird songs
Mini-project 2: neural activity data analysis project (to be chosen among 3-4 data sets)