

# Introduction to Scientific Programming in Python with Application to Neural Data Analysis

## Course Instructor: Dr. Vahid Rostami

Computational and Systems Neuroscience, Department of Biology, University of Cologne

Goal of this module is to bridge the gap between scientific programming and data analysis. To pursue this goal this module will (1) equip the student with basic skills of scientific programming with PYTHON, and (2) provide the student with hands-on experience in the statistical analysis of experimental data sets and the adequate presentation of results.

In the first phase of this module the students will learn programming in PYTHON and tools commonly used in scientific computing. No previous programming skills are required.

In the second phase students work in pairs on small sized data analysis projects and learn to address research questions by quantitative analysis. They will analyze various different experimental data sets with a focus on recordings from neurophysiological and behavioral animal experiments. The students will acquire expertise in various statistical methods focusing on continuous and discrete time-series data. The students will also learn to visualize data and quantitative results in camera-ready figures using PYTHON.

As course preparation the students have to read scientific papers introducing the projects and data sets. At the end of the course there will be a written exam. Introduction to programming covers about half of the course, applied data analysis covers the other half. Computers are provided.

**Master Biological Sciences (Elective Module)**

**Master Experimentelle und Klinische Neurowissenschaften**

**Bachelor Biological Sciences (POL)**

**Credit Points :** 3CPs

**Dates:** Feb 10-18, 2020; daily 9:30 am – 17:00 pm

**Location :** Room 0.20, Biozentrum

**Registration (12 places available):** [vrostami@uni-koeln.de](mailto:vrostami@uni-koeln.de)

**Deadline:** Dec 20, 2019

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