

Programming for Neuroscientists (28.09.-02.10.2026; 10 – 20 participants!)

Grinevich Department – ZI Mannheim

Purpose

Neuroscience is an interdisciplinary subject integrating behavioral, physiological and molecular techniques. Modern experiments create large data-sets requiring advanced and often customized analysis methods. This course introduces Python as a tool for custom data-analysis, based on a small sample from a larger data-set.

Python is a [popular](#) and rather easy to programming language, with active communities developing programs and packages for advanced data-analysis. To facilitate the adaption of these, participants will acquire fundamental computer-science knowledge together with basic knowledge in Python. This should enable them to enter the begin utilizing more specialized work based on Python.

Goal

Participants will be enabled to create their own short programs and to begin utilizing the work their community already did in Python. The course will also be ease the acquisition of other programming languages.

Description

The course teaches basic programming in Python on the example of an analysis-task based on neuronal data. The focus are theoretical foundations, problem-solving strategies and differences between "biological" and "computer-science" approaches to problems. The course will introduce general concepts and the language itself by creating code for the analysis-task. The participants and the tutor interactively develop the solution and code to solve the analysis task.

Further information

Topic	Information
Language	English
Number of participants	10-20
Course-materials	https://github.com/Einsied/PythonBasicsForBiologists
Date	28th September until 2th of October 2026
Place	Central Institute for Mental Health, J5 Mannheim Mo: Hans-Martini-Saal, Suchtklinik 4. OG Tue: Raum 106, Therapiegebäude 1. OG Wed: Hans-Martini-Saal, Suchtklinik 4. OG Thu: Raum 106, Therapiegebäude, ZIPP Lounge Fr: Hans-Martini-Saal, Suchtklinik 4. OG
Time-slot	10:00 c.t. - 16:00 c.t.
Prerequisite	none extraordinary
Necessary materials for participants	a device capable to connect to eduroam and able to run a java-script-capable browser (like firefox, Chrome or Edge) with an character input method. The usage of a laptop and pen and paper are advised.
Contact	Dr. Eduard Maier Maier <Eduard.Maier@zi-mannheim.de>

Neural Derivatives of iPSCs to 2D and 3D

Philipp Koch Department – ZI-HITBR

This course will offer a lecture of the different stages of cell differentiation, basic immunostaining of 2D cultures, a look at 3D cultures and their composition, embedding procedures, etc. There will also be an overview of the principles of the analysis of single-cell data (RNAseq). The course will take approximately 3 days.

Contact: philipp.koch@zi-mannheim.de

SOFT SKILL COURSES (die folgende Überschrift sollte auf der Courses Seite oben bei soft skill courses erwähnt werden (markiert) und klickbar sein zu der folgenden Information)

From the Idea to a Paper: Designing, Executing and Publishing Research in Systems Neuroscience

Grinevich Department – ZI Mannheim

This course uses Ishiyama & Brecht (2016, Science, doi:10.1126/science.aah5114) as a case study to trace the entire research process step by step, from the generation of an initial idea to publication and public dissemination. Beginning with problem formulation and hypothesis development, the course examines experimental strategy and methodological decision-making, followed by the design principles of in vivo recording systems, hardware construction, and signal synchronization. It then moves from low-level analyses of behavior and neural activity to high-level analyses including statistical visualization, while outlining approaches to data management. In the latter part of the course, we discuss principles of figure design, narrative construction, presentation of novelty, the process from submission to peer review, and finally the public communication and outreach of research findings.

- Day 1 (2.5 h): Idea, experimental strategy, and experimental methodology
- Day 2 (3 h): Data analysis, data management, and code management
- Day 3 (2.5 h): Graphic design, manuscript, and outreach

Participants: open

Time: October - November

Contact: Ishiyama, Shimpei <Shimpei.Ishiyama@zi-mannheim.de>