

ONWAR course – Python for Neuroscience 23-27 Feb 2026

Final schedule

Day 1 – 23/02/2026 (09.00 – 17.00)

09:00–10:00 1. Lecture: Introduction to Programming & Data Analysis

10:00–10:30 2. Hands-on: Python Basics

10:30–11:00 3. Hands-on: Functions and Packages

11:00–11:30 4. Hands-on: Data Frames

11:30–12:00 5. Hands-on: Importing Data in Python

12:00–13:00 🍽️ Lunch Break

13:00–14:00 6. Hands-on: Data Visualization

14:00–15:00 7. Hands-on: Univariate Statistics

15:00–16:00 8. Hands-on: Good Coding Practices

16:00–16:30 9. Hands-on: Writing Efficient Code

16:30–17:00 10. Wrap-up

Day 2 – 24/02/2026 (09.00 – 17.00)

- 09:00–10:00** 1. Lecture: Introduction to Medical Image Processing
- 10:00–10:30** 2. Hands-on: Images as Matrices & Jupyter Notebooks
- 10:30–11:00** 3. Hands-on: Image Types, File Formats & Intensity Scaling
- 11:00–11:30** 4. Hands-on: Spatial Resolution & Quantization
- 11:30–12:00** 5. Hands-on: Masking & Simple Segmentation
- 12:00–13:00** 🍽️ Lunch Break
- 13:00–14:00** 6. Hands-on: Geometric Transforms & Interpolation
- 14:00–15:00** 7. Hands-on: Image Registration
- 15:00–15:30** 8. Hands-on: Morphological Operation
- 15:30–16:00** 9. Hands-on: Frequency-Domain Filtering
- 16:00–17:30** 10. Hands-on: Large Images & Connected Components
- 16:30–17:00** 11. Wrap-up

Day 3 – 25/02/2026 (09.00 – 17.00)

09:00–10:00 1. Lecture: fMRI, dMRI & the Brain as a Network

10:00–10:30 2. Hands-on: Visualizing Connectivity Matrices

10:30–11:30 3. Hands-on: Graph Properties & Hubs

11:30–12:00 4. Hands-on: Communities & Subgraphs

12:00–13:00 🍽️ Lunch Break

13:00–14:00 5. Hands-on: Graph-Theory Statistical Analysis

14:00–14:30 6. Hands-on: Null Models & Null Distributions

14:30–15:30 7. Hands-on: Network-Based Statistics (NBS)

15:30–16:30 8. Hands-on: Threshold-Free Cluster Enhancement (TFCE)

16:30–17:00 9. Wrap-up & Q&A

Day 4 – 26/02/2026 (09.00 – 17.00)

09:00 – 09:30 1. Lecture: General introduction to patch-clamp electrophysiology

09:30 – 10:20 2. Hands-on: Analysis of passive membrane properties of neurons

10:30 – 11:20 3. Hands-on: Analysis of neuronal action potentials

11:30 – 12:00 4. Hands-on: Explore datasets of patch-clamp data

12:00–13:00 🍽️ Lunch Break

13:00 – 13:50 5. Hands-on: Analysis of postsynaptic events

14:00 – 16:30 6. Open group project : Analysis of postsynaptic potentials

16:30 – 17:00 7. Wrap-up & Q&A

Day 5 – 27/02/2026 (09.00 – 18.00)

09:00 – 09:30 1. Lecture: General introduction to two-photon calcium imaging

09:40 – 10:50 3. Hands-on: Preprocessing and analysis of two-photon calcium imaging

11:00 – 12:00 4. Open group project: Applying peak detection

12:00–13:30 🍽️ Lunch Break

13:30 – 14:30 5. Wrap-up and Q&A with all speakers

14:40 – 15:45 6. Discussion and feedback on the course

16:00 – 18:00 BORREL