

Course title: Signal and Data Analysis in Neuroscience

Course number: 27-505

Lecturer: Prof. Izhar bar Gad

Second semester

Hours: 2+1 h/w – 3 credit points

Course goals

Provide the basis for enabling the analysis of signals and data acquired in the various fields related to brain sciences.

Course topics

- Signals & data in neuroscience
- Stochastic processes
- Poisson processes
- Single spike train
- Multiple spike trains
- Event related activity
- Neural encoding
- Neural discrimination
- Neural decoding
- Optimization
- Information theory
- Frequency domain
- Systems
- Filters
- Spectral analysis
- Wavelets
- Clustering
- Dimensionality reduction
- Independent component analysis (ICA)

Course Website: <https://www.ibglab.org/courses>

Course requirements

Homework submission, passing the exams

Final grade

Homework 50%

Two exams, 25% each