Syllabus

Introduction to EEG methods in Cognitive Science

PhD Research Course
Department of Cognitive Science
Central European University
Fall 2017, 2 credits

Class: Fridays 13:30 to 15:10, Room 103, Október 6. utca 7, and in the labs

Instructors:
Gergely Csibra
Katarina Begus

Description:
This course introduces students to the use of electroencephalography (EEG) for measuring brain function to access cognitive mechanisms in humans. This is a practical course, where students receive hands-on experience in recording and analyzing EEG data, as well as in designing experiments and interpreting findings using this method.

Learning Outcomes
By the end of the course, students should

- be familiar with the nature of the EEG signal and its derivatives,
- be able to design experiments using EEG measures,
- know the basic steps of analyzing EEG data, and
- be able to critically interpret the results of studies published with this technique.

Evaluation:
Grade is awarded on the basis of

- attendance of classes and lab practice,
- completing assignments in data analysis,
- and submitting a research report and an experimental design by the end of the term (submission deadline: December 15, 2017).

Schedule:

Sep 15 (Zero week)
Assessing cognitive mechanisms via EEG-derived methods

Sep 22
The neural basis of the EEG signal and its dependent measures

Sep 29
Recording EEG: principles and techniques

Oct 6
Recording lab practice

Oct 13
NO CLASS

Oct 20
The initial steps of EEG analysis

Oct 27
Event-related potential (ERP) analysis

Nov 3
ERP quantification, grand average, statistics

Nov 10
Spectral analysis and time-frequency analysis

Nov 17
Critical evaluation of EEG studies

Nov 24
Experimental design for EEG/ERP studies

Dec 1
Combination of neuroimaging methods and Discussion

Dec 8
Wrapping up