Introduction to EEG and MEG, 1.5 credits

Introduktion till EEG och MEG, 1.5 hp

Third-cycle education course

7FIBL21

Department of Behavioural Sciences and Learning

Valid from: First half-year 2026

Approved by
The Board of PhD Studies

Approved
2025-12-05

Revised
2025-11-05

Registration number
IBL-2025-00329

Entry requirements

Entry requirements for studies on third-cycle education courses:

- first-cycle degree,
- 210 credits in relevant courses, including at least 30 second-cycle credits
- acquisition of equivalent knowledge in some other manner

Specific information

It is recommended to have participated in “Introduction to brain imaging, 1.5 hp” before starting this course.
Students need to have access to EEGLAB, which can be downloaded from https://sccn.ucsd.edu/wiki/How_to_download_EEGLAB.

EEGLAB runs under MATLAB, which can be downloaded via minit.liu.se. Further information will be given at the start of the course.
The course will be given in either English or Swedish, depending on the linguistic preference of the students.

Learning outcomes

By the end of the course, the students will be able to:
Knowledge and understanding

- Explain the fundamentals of EEG and MEG techniques
- Understand the procedure for preprocessing of EEG and MEG data
- Explain the different types of analysis of EEG and/or MEG data and their implication for study design

Competence and skills

- Design an EEG study in relation to a specific research question

Judgement and approach

- Discuss different aspects of experimental design of importance for EEG and MEG studies

Contents

Topics included in the course are:

- Basics of EEG and MEG
- Different designs and design aspects to consider when planning EEG and MEG studies
- Basics of preprocessing steps and how to perform preprocessing in EEGLAB
- Overview of analysis types in EEG and MEG data: ERP/ERF, TF, and source analysis

Educational methods

Teaching includes lectures and workshops with theoretical and practical elements (preprocessing, evoked analysis, and induced analysis). The EEG/MEG analyses program EEGLAB (running under MATLAB) will be used for practical exercises. The students are expected to have access to EEGLAB during the workshops and read the course litterature.

Examination

Examination includes an individual written assignment.* *
Students who fail are offered one re-examination occasion in close connection to the course. Following that, participation in the upcoming course examination is offered. The re-examination should be equally comprehensive as the ordinary examination.

Grading

Two-grade scale

Course literature

The course coordinator will provide a list of recommended literature before the start of the course.

General information

Change of examiner
Students who have failed the course or part of the course twice are entitled to request another examiner for the following examination occasion.
Course certificate
On the student's request, a course certificate is issued by the course examiner.