

Advanced EEG Methods

Course #101-2-25

Tuesdays 12:00-14:00, Room 401, Bldg #35

This graduate level course will teach students advanced techniques for building and analyzing EEG experiments using Matlab. We will build complex (interactive) experiments and perform advanced analyses of EEG data, which will include signal processing in the time and frequency domains. The course will be given in a computer lab, students will write Matlab code themselves, and hand in 2 graded assignments: one small (30%) and one large (70%).

In order to build and analyze the EEG experiments you will need to download and install [Psychtoolbox](#) and [EEGLab](#).

Lesson 1: EEG basics & introduction to psychtoolbox – [Class files](#)

Lesson 2: ERP experimental design & building a visual experiment – [Class files](#)

Lesson 3: Visit my EEG lab, set up and perform an experiment

Lesson 4: Manual ERP analysis of a single subject using [EEGLAB](#) ([see tutorial](#))

Lesson 5: Automated ERP analyses for multiple subjects using EEGLAB – [Class files](#), [Data](#)

Lesson 6: Comparing results across conditions and statistical tests – [Class files](#)

Lesson 7: Current Source Density – [Good intro](#), [Class files](#), [CSD Toolbox](#)

Lesson 8: Independent Component Analysis – [Simple explanation](#), [detailed explanation](#), [Class files](#)

Lesson 9: Fourier transform & Periodograms – [Class files](#)

Lesson 10: Spectrograms – [Class files](#)

Lesson 11: Coherence – [Class files](#)

Lesson 12: Source localization – [Class files](#)